

nanda De's Dispensary and Rāni Srimati's Female Dispensary. The other dispensaries are situated in the interior at Bāliapāl, Bhadrakh, Chāndbāli, Eram, Ghanteswar, Jaleswar and Soro. Of these the Bhadrakh Dispensary, established in 1868, has accommodation for 12 (8 males and 4 females) indoor patients and the Chāndbāli Dispensary for 18 (10 males and 8 females) indoor patients. The other dispensaries afford outdoor relief only. Recently also, as an experimental measure, an itinerant Civil Hospital Assistant has been appointed by the District Board to visit the markets in the Bhadrakh subdivision and afford medical relief to the poorer classes.

Among the medical institutions of the district may be mentioned the Pilgrims' Lodging House Fund, which contributes to the pay of the Civil Hospital Assistants in charge of the dispensaries at Chāndbāli and Jaleswar, keeps in repair the latter dispensary and that at Soro, and meets the pay of a compounder and sweeper at the two places last named. The Fund also provides for the cleaning of wells along the Trunk Road and for the up-keep of *chattis* or pilgrims' rest-houses at Turkia, Soro and Bhadrakh (Nayābazar). The annual expenditure averages about Rs. 2,500.

The following tables show the principal diseases treated together with the number of operations performed, and the receipts and expenditure of each hospital and dispensary during 1905:—

NAME OF DISPENSARY.		DISEASES TREATED.					
		No. of operations.	Malarial fever.	Skin diseases.	Diseases of the ear.	Intestinal worms.	Vene- real diseases.
Balasore	Pilgrim Hospital	509	312	196	101	157	483
	Central ditto ...	5	18	...	...	...	1
	Rāja Sbyāmūnanda De's Dispensary.	339	1,436	738	214	110	120
	Rāni Srimati's Fe- male Dispensary.	39	294	109	101	47	64
	Bāliapāl Dispensary	121	1,067	1,074	214	171	55
Bhadrakh ditto	71	528	618	301	380	93	
Chāndbāli ditto	196	3,053	826	264	685	848	
Eram ditto	190	376	387	188	...	28	
Ghanteswar ditto	170	1,014	584	188	93	40	
Jaleswar ditto	149	896	644	158	586	124	
Soro ditto	104	1,574	578	576	...	74	
Total		1,983	10,568	5,748	2,305	2,032	1,390

NAME OF DISPENSARY.	RECEIPTS.				EXPENDITURE.	
	Government contribution.	District Fund.	Municipal Funds.	Subscriptions and other sources.	Establishment.	Medicines, diet, buildings, &c.
Pilgrim Hospital ...	165	525	650	765	894	2,005
Central ditto ...	5,000	640	225	220	104	1,458
Balasore { Raja Shyam- nanda De's Dispensary ...	...	...	...	278	665	212
Rani Srimali's Female Dispensary ...	...	...	...	...	420	124
Baliajal Dispensary ...	...	572	...	33	670	185
Bhadrakh ditto ...	170	2,044	...	631	935	584
Chandbali ditto ...	40	1,624	...	542	1,104	419
Eram ditto ...	...	833	...	...	518	315
Ghantewar ditto ...	...	...	...	608	485	183
Jaleswar ditto ...	...	...	...	1,153	843	310
Sero ditto ...	...	...	...	581	489	92
Total ...	5,875	6,488	875	5,371	7,127	

## CHAPTER V.

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AGRICULTURE.GENERAL  
CONDI-  
TIONS.

AN account has been given in Chapter I of the three tracts into which the district is naturally divided, viz., the littoral, forming the sea-face of the Bay of Bengal, the submontane, under the western hills, and between them a zone of highly fertile land intersected by a network of rivers. To the east is a low-lying tract, a great part of which is impregnated with salt and unfit for cultivation, while much of the rest is exposed to damage from storm-waves. To the west is a jungly and uncultivable region of undulating land covered with bamboos and scrub jungle.

Between these two tracts lie the alluvial plains forming the greater part of the district, which present a gradual and steady slope from the high lands of the west to the sea, and a composition varying according to the relative proportion of the sand and silt of which they are formed.

Tracts of  
fertility.

These three main divisions may, however, be subdivided for general purposes into smaller divisions. In the area lying between the Coast Canal and the sea, we find extending upwards from the river Gamai to the Burābalang, a great plain of grass lands, the grazing ground of herds of cattle and buffalo, with occasional sparse patches of cultivation and low scrub jungle upon the sand ridges and near the tidal streams. South of the Gamai between the protective embankment and the sea, the aspect of the country is the same. Between the Burābalang and Hāskurā there is a little cultivation immediately on the east of the canal, and beyond this is a network of tidal creeks fringed with heavy jungle. From the Hāskurā to the Subarnarekhā cultivation is met with inside the wooded sand hills which run in parallel ridges along the coast. At the mouth of the latter river and along the tidal creeks spreads an impenetrable jungle; and upon the north side the coast line is marked with sand ridges which protect the cultivated lands extending to the canal.

On the west of the district, where the boundary approaches the hills and the lands are higher, there is a reddish rocky soil, which is partially broken up to yield a scanty crop, and contains patches of jungle, including a little *salt*, which rarely attains any

size. In other places, however, where the hills run precipitously down to the arable lands, the land is often of considerable fertility, as it is enriched by the vegetable matter washed down from the higher ridges.

The remainder of the district is a plain of arable lands, varying in level from the *pāts* or low lands, such as the Talhati in Bayang, the Ankura *pāt* and Babaria *jhi* in Kamardachaur, to the stretch of higher lands in the centre running from *pargana* Balikhand upwards, and widening towards the town of Balasore.

Balasore is a land of abundant rainfall. Since 1860 the average registered fall for the year has been over 60 inches; it has occasionally been as great as 80 or 90 inches and once (in 1862) was over 111 inches; and it has only twice been less than 50 inches. On the other hand, the rainfall is precarious, and an untimely or unequal distribution is liable to cause the partial or complete destruction of the crops, even if the actual fall does not fall short of the quantity required. A heavy shower in February or March is necessary to enable the land to be ploughed, but the most critical months are May, September and October. If the May showers, which are the precursors of the monsoon rains, do not fall, sowing may be prejudicially delayed; but deficiency in the rainfall in September and October is even more dangerous, as it affects the maturing of the staple rice crop. The most terrible famine the district has ever known was caused by the failure of the September and October rains in 1865. On the whole, it may be said that a well-distributed rainfall of 40 inches is sufficient to secure the crop, provided that not less than 4 inches fall in October; but in order to obtain a bumper crop at least 50 inches are required, of which 8 inches must fall in September and 6 inches in October. In the last 40 years, however, there have been 12 occasions, on which the fall of October has been less than 4 inches; and, generally speaking, the cultivators have to face the prospect of having once in every three or four years a rainfall less than the maximum compatible with the ripening of the crop, and of suffering a loss of at least a portion of the rice in the unirrigated lands.

Besides this, the district is liable to inundation from the rivers overflowing their banks when swollen by heavy rainfall in the hills. It is only, however, when they are of an extraordinary height and of long duration, or when they occur so late as to render resowing impossible, that very serious and widespread damage is done by such floods. Provided that they are not too high or of long continuance, and that they come early in the season, they are productive of almost as much good as harm, as



the fertilizing silt they leave behind renews the productive powers of the soil and assures excellent harvests.

**Irrigation.** Owing to the ample supply of rainfall in ordinary years, irrigation is far less essential than in less favoured parts of the Province, and, except for the canals, it is comparatively little used. The area irrigated by the canals is practically all under rice, and water is taken from April to December, the demand for it being greatest in May and June, when it is required for ploughing the land, in July and August for loosening the soil at the roots of the young plants, and in October for the final ripening of the crop.

The rainfall is, however, generally so steady that it is only in exceptional years that there is any urgent need for canal water. The lower lands are very flat, and retain most of the rain-water; and there are only a few places where, in most years, artificial irrigation is absolutely essential for rice cultivation. Irrigation is carried on to a certain extent from the rivers, the river water being utilized for the crops near their banks, but tanks are seldom used for the purpose. In such cases, irrigation is generally confined to the more valuable crops, such as sugarcane, tobacco and cotton. Well water is not used for ordinary cultivation, but only for garden crops.

**Water-lifts.**

In low-lying tracts water is taken from the small streams and creeks by means of the *tendā* or bamboo water-lift. This contrivance for raising water consists of two upright posts with a cross-bar which serves as a fulcrum on which a bamboo pole works; the latter is weighted at one end by a stone or mass of mud, and at the other a thin bamboo is fastened, with an earthen pot or bucket attached. When water is required, the cultivator pulls down the bamboo pole till the bucket is immersed; as soon as the tension is relaxed, the weight attached to the lever raises the bucket of itself, and the water is then emptied into the *nodhā* or pipe, which is generally the hollowed trunk of a palm tree, and is directed into the fields. When the field is any considerable height above the water, a platform is built on four stout bamboos on which a man stands to work the lever.

Where the water has only to be raised a few feet, it may be scooped up in a *scudā*, a sort of basket made of split bamboo which two men use. Holding the ropes attached to either side, they swing it backwards, and bringing it down sharply into the water, carry the forward motion of the swing through, until the *scudā*, now full of water, is raised to the level of the water-channel, when the contents are poured out. Another way of lifting water a short distance is with a scoop, called the *jantā*, which is made of a

single piece of wood about 6 feet long, hollowed out and shaped like one-half of a canoe, the broad open end of which rests on the head of the water-channel. The pointed closed end dips into the water, and when this is raised the water pours naturally into the channel. It may be worked by one man either directly or with the help of a bamboo crane and counterpoise, as is done with the *tendā*, but it cannot lift more than a couple of feet. Sometimes two of these methods are combined, the water being lifted by the *tendā* into a reservoir, and from that into the water-channel by a *senā* or *jantā*.

The arable land in the plains consists of alluvium in which sand and clay are intermixed in varying proportions; but the cultivators recognize a large number of different classes of soil, the names of which vary according to their situation, elevation and composition. In an ordinary village, the lands fall primarily under three main divisions according to their situation, viz., (1) The low lands retaining rain water, and hence called *jala* or wet lands, on which winter rice is grown. These lands predominate in the district and comprise the greater part of the whole cultivated area. (2) The high lands round the village homesteads, which being enriched by manure and household refuse, have a blackish colour and are therefore called *kālā*; they are devoted to vegetables, cotton, jute, and other valuable crops. The homestead land is also known by the generic name of *gharbāri*; and the land lying between this and the fields is called *gantāh*. (3) The riverside lands (*pālā*), which being periodically fertilized by deposits of silt are suitable for growing tobacco, cotton, mustard and other *rabi* crops.

Arable lands are also classified according to their elevation, the low-lying lands being called *gahirā* and the high land *dānga*. High lands which are not enriched by silt and cannot retain water are contemptuously referred to as waste land (*thengā* or *thengi*). A further classification under which all lands fall is that of quality. The first class (*auf*) includes all soils which retain moisture up to the time when the ear is ripe; and alluvial and homestead lands also rank in this class on account of their special fertility. The second class (*doom*) includes land at medium level which retain moisture up to September. Inferior and sandy soils rank under the third class or *soem*. The soils are again divided into four great classes according to their composition, viz., (1) *matal* or clay lands, (2) *derasā* or loamy soils, (3) *bālā* or sandy lands, (4) *patu* or alluvial soils.

The ryots, however, recognize a large number of minor distinctions and give different names to the soils according to the

extent to which clay, sand, loam and silt predominate in their formation. *Matal* is the name given to all kinds of stiff clayey soils on which rice and sugarcane are principally grown. *Chiktāmatal* is a strong sticky clay, which is almost too stiff to be used for successful cultivation, and grows for the most part coarse varieties of winter rice. The outturn on such lands is said to be generally very poor. *Dorad* is a mixture of sand and clay in nearly equal parts. It is used for *bidli* or autumn rice and for all *rabi* crops. It is easily worked and is retentive of moisture. *Telbali* is the name given to a loam which contains a larger admixture of sand than the *dorad* lands. It is looser in texture, and being poorer, requires more manuring than the latter. *Baliāmatal* is a loam with a large admixture of earth; in other words, a rich sandy loam. *Bali* is the name given to very loose sandy soils which grow the poorer kinds of *rabi* crops. *Thengājanā* is an elevated sandy loam with very little moisture, which as a rule is allowed to lie waste. *Patu* is an alluvial soil, formed from silt deposited by floods. It is used for tobacco, jute, coriander and mustard, and is taken advantage of to grow all kinds of miscellaneous crops.

#### PRINCIPAL CROPS.

##### Rice.

The district contains fringes of jungle along the sea-board to the east and along the edge of the hilly country to the west, but elsewhere there is a vast rice plain. Rice, occupying 1,293 square miles or 91 per cent. of the net cropped area, is the all-important crop of the district. Except for narrow strips along the banks of the rivers and the little garden plots in the homesteads of the peasants, it may be broadly stated that the whole district produces rice and nothing but rice. The varieties grown are very numerous, but they all fall under one of three heads according to the season at which they are sown and reaped, viz., (1) *bidli*, or early rice, sown in May and reaped in August and September; (2) *sarad*, or winter rice, sown in May or June and harvested between October and January; and (3) *dālua*, or spring rice, which is sown in December or January after the floods have subsided and is harvested in March and April.

##### Inter s.

The most important of all these crops is the *sarad* or winter rice, which is estimated to cover 1,025 square miles or 77 per cent. of the total area under cultivation. No less than 146 varieties of *sarad* rice are recognized locally, but there are three main classes, viz., *ashu*, *kanda* and *guru*. The former is grown on the high lands, *guru* on the low lands, which are covered with water for months together, and *kanda* on the lands at an intermediate level. Sowing takes place in May or June according as the rains are early or late, but the time of harvest varies for the different

varieties, the *ashu* being reaped in August or September, the *kanda* in September or October, and the *guru* from November to January. Where the land is high, the crop is sown broadcast, but in the low lands the seedlings are transplanted, as otherwise the water would wash away the seeds and drown the early seedlings. The rice-fields vary in size, ranging from small plots covering  $\frac{1}{2}$ th of an acre to large fields occupying an acre of ground. They are enclosed on all four sides by small ridges (*hira*) about a foot in height and breadth, in order that the rain water collected in these artificial shallows may keep the plants wet; otherwise, the land losing its moisture, the plants would quickly wither and the crop be lost.

After the winter crop has been harvested in December, the cultivator is on the look out for the first shower of rain to plough his land. The time of ploughing necessarily depends on the rainfall, but if the cultivator is lucky, this occurs in February. As soon as the first shower falls, the country is covered with miserable looking half-starved cattle dragging primitive ploughs, which as a rule never penetrate a foot below the surface of the soil. The land is ploughed as often as the weather and the resources of the cultivator permit, but as a rule four or five ploughings are considered sufficient. The soil after being turned up is exposed to the action of the sun and wind, and those lands which lie beyond the reach of the fertilizing river silt are manured. The peasant then waits for the showers which usher in the monsoon, and starts sowing as soon as they appear in May or June. The plants germinate in 15 days, and consequently the earlier the seed can be sown and the stronger the young plants are when the rains set in, the better is the chance of a good crop. During the latter half of June and the first half of July the growth of the rice is helped by the monsoon rains, and the cultivators have little to do but watch the young plants growing up, mend the small ridges round the fields, and do similar odd jobs. During the rest of July and August, when the plants have attained a height of about 15 inches, there is the important operation called *beusan* (literally changing of place) to be performed. This consists of driving the plough through the young rice in order to thoroughly loosen the soil at their roots; the rice plants are then firmly replanted by hand and a sort of blunt harrow is driven over the field to level and consolidate it. The ridges enclosing the fields are then finally strengthened, the grass cleared away from them, and the weeds removed. For these operations an ample supply of water is necessary, and if this is available and there is sufficient rainfall in September and October, a good harvest is secured in the cold-weather months.

Methods of  
cultiva-  
tion.



From the preceding account it will be clear that the time of sowing and reploughing are two important periods when the *sarad* crop requires water, but by far the most critical period comes in the middle of October, when its fate depends entirely on there being enough water to mature it and to fill out the ear. At the first period no artificial irrigation is possible, and the people depend on rain water. At the second and third periods lands commanded by the canals can always get a plentiful supply of water, and under normal conditions the other lands also get sufficient rain water; but in years of deficient or unevenly distributed rainfall the people are obliged to irrigate the crop from every available source.

Nearly all the *sarad* rice is broadcast, transplantation being an unpopular system of cultivation, as it involves more labour and the transplanted seedlings are very delicate for the first month and liable to injury by flood and still more by drought. It is, however, admitted that, when successful, transplantation gives a larger yield, and it is resorted to for fields, especially for those under irrigation, which grow a *sarad* crop after *biāli*, to avoid the risk of early floods and to replace the loss of the broadcast crop if it is destroyed before the end of July. The seeds are sown either wet or dry in a nursery, which is generally a field near the village well manured and fenced in to keep off jackals and other animals. The land is carefully watered, and when the seedlings are a month old, they are transplanted into the rice-field. The latter is prepared by ploughing and manuring in the same way as for broadcast rice, and is once again ploughed and harrowed before the young plants are planted. The seedlings are arranged in bunches of three or four plants with a small space between each bunch; the roots are carefully imbedded to the depth of a couple of inches; they are then left, and require no further attention beyond a good weeding and a copious supply of water. The earlier the transplantation is done, the better the results, and the proper time is considered to be from the middle of July to the middle of August.

*Biāli*  
rice.

The *biāli* or early rice, which covers an area of 168 square miles, ranks next to *sarad* rice in importance. There are two main classes of *biāli*, viz., the early variety, called *sāthikā* from the fact that it comes to maturity 60 days from the date of sowing, and the *barā dhan* ripening about a month later. Both varieties are sown broadcast and are grown on the higher lands of the villages, and for preference in a light loamy soil. The whole crop is more precarious than the winter rice, being injuriously affected by drought in June and July, and being also liable to destruction



by heavy floods early in the season. A failure of this crop does not, however, affect the people very seriously, as they can generally be recouped for its loss by a good harvest of winter rice. If the *biñi* is damaged by a deficiency of rain or by inundation and there is no time for resowing, the lower lands at least can be sown with *sārad*, which with seasonable rainfall gives a good harvest, and so makes up for the loss occasioned by the loss of the early rice. On the other hand, if the rain is well distributed in the early part of the season but fails at its close, a bumper crop of *biñi* will, in part at least, compensate for the *sārad* crop being spoilt.

*Dālua* is a coarse variety of rice, which is grown on low swampy grounds and on lands too heavily water-logged to yield *sārad*. Clay lands subject to tidal inundation are commonly chosen for the purpose, as it requires a low level and facilities for irrigation. It is sown in the winter and reaped in the spring, and a good supply of water is therefore necessary. The crop may be either transplanted or broadcast, but the former method is the more common. A nursery is selected in the corner of a field or tank, in which the seedlings remain till they are about a foot high; they are then imbedded in the rice field, which has been ploughed till it is a pulpy mass, and this is kept covered with water till the seed flowers. It ripens in March or April, and the crop is then cut.

The area under *dālua* rice is insignificant, and it is mostly grown in the south of the district. Although, however, the normal area under it is small, it is sown very largely when there is a failure of the *sārad* rice; thus, after the year 1895, when the *sārad* crop was destroyed, 2,000 acres were brought under irrigation from the High Level Canal, and the area irrigated from other sources was probably as great.

The other food-grains are of minor importance, occupying only 12,000 acres, and call for only a brief notice. They include the crops known as *māga*, *birhi*, *kulthi*, *china*, *arhar*, maize and wheat. *Māga* (*Phaseolus Mungo*) is a pulse largely consumed by the poorer classes; it is sown broadcast in August and September and reaped in December or January. *Birhi* (*Phaseolus radiatus*) is also sown broadcast in the rains, and, like *māga*, yields a little round pea which is eaten as a pulse in the form of *dal*. It is grown after *biñi* rice, where the land is rich enough, and is found chiefly in inundated areas. *Kulthi* (*Dolichos biflorus*) is another pulse which is one of the cheapest *rabi* crops. It is sown in November and cut in February, and is commonly eaten in the form of *dāl* by the poorer classes. *China* (*Panicum miliaceum*) is a cereal sown in August and September and reaped

Other  
cereals  
and  
pulses.

in December. *Arhar* (*Cajanus indicus*) is sown in June on the *kala* lands, i.e., the high homestead lands, and is harvested in December. Indian corn or maize (*makai*) is sown in July and the cobs are plucked in September. Wheat is an insignificant crop, being grown on only 100 acres.

**Oil-seeds.** Of all the oil-seeds, mustard and rape cover the largest area, being grown on 7,000 acres. Mustard is grown on the river-side lands which are enriched with silt; it is one of the most valuable of the *rabi* crops. *Til* or gingelly is raised on 2,100 acres, linseed on 100 acres, and the total area under all other oil-seed crops is 2,400 acres; the most important of these is the castor-oil plant, which is usually found on homestead lands or in sandy fields along the beds of rivers, it being a peculiarity of the plant that it will grow in a depth of sand which would kill other crops.

**Jute.** The chief fibre crop is jute, which is grown on homestead lands with facilities for irrigation or on rich alluvial soil by the river side. Its cultivation has expanded very greatly in recent years. Ten years ago the area under this crop was only 140 acres, whereas it is now more than 4,000 acres. This rapid growth of jute cultivation is due to the high prices now obtained for the product, which sells for Rs. 6-8 to Rs. 7-8 a maund, while paddy only commands Rs. 2 to Rs. 3 a maund; and if the Balasore ryot continues to extend the cultivation of this paying crop in the same way, it may be anticipated that the growth of the industry will result in his becoming a man of substance instead of one of the poorest of Indian tenantry.

The only other fibre crop is cotton, which, like jute, is grown on homestead or riverside land; the area under cotton is however insignificant, amounting only to 300 acres.

**Sugarcane.** Of the other crops, the important is sugarcane, which covers 2,000 acres. The plant requires a loamy soil and is grown generally on lands near the village and within easy reach of canal irrigation, or on the edges of natural watercourses, where the land is out of the range of canal water. It is a crop requiring incessant attention and involving a large expenditure of time, labour and money. The field has to be ploughed some twenty times and richly manured before the cuttings are planted in January or February. Then constant irrigation is necessary, and the soil has to be loosened, and oil-cake and mustard oil applied to the roots. These processes are repeated at intervals, the land being irrigated so as to keep it continually moist; and after the fourth application of oil-cake in May or June, the soil is loosened by the plough and the land weeded. The stems are then wrapped in sugarcane leaves and tied up; after another

These vegetables are grown most largely in Remunā, Phulwār and Kemdi for the supply of the Balasore market, and in Rāndia-orgara, Sanaut and Dhāmnagar for that of Bhadrakh.

The most popular fruit is the plantain, which is grown in nearly every part of the district; it is eaten as a fruit and also with curries, for, like the *brinjal*, it forms the basis of most of the vegetable curries which please the palate of the Oriyā. Mangoes grow freely and form a very valuable addition to the food of the people during the hot weather, though their quality is decidedly inferior to the Malda and Bombay varieties. The trees seem to thrive in south and east winds, and a west wind blowing constantly when the tree is in blossom destroys all promise of a good crop. Fine apples are grown in many villages, but are not plentiful enough to form a very valuable article of food. Among other fruits are the *bel*, jack, tamarind, Indian plum, custard apple and papaya. Spices, turmeric, chillies, coriander and ginger, which are used largely in cooking, are grown to a certain extent. There are altogether 50,000 acres under garden crops and orchards. Generally speaking, the fruit crop of the district is precarious owing to the prevalence of storms in March, April and May.

EXTENSION  
OF CULTIVATION.

In the beginning of the 19th century the district had been reduced to a terrible state of desolation by the tyranny of the Marāthās. The hereditary heads of the people had fled to the Garhajāts, where the independent tributary chiefs gave them protection in their hilly and jungly retreats; no land-holders could at first be found to engage for the lands; the ryots had found from bitter experience that they could get land on more favourable terms in the hills and had better prospects of enjoying the fruits of it; and the population was consequently insufficient to till the fields. A traveller who visited Orissa in 1806 found himself in danger of wild beasts from the moment he entered the Province. Between Balasore and Cuttack, in a country now thickly populated and closely cultivated, he passed through a jungle abounding in tigers and required a guard of sepoy for the journey. Since that time, cultivation has extended steadily under a settled government, though it was at first impeded by frequent droughts, by the injudicious settlements made in the early years of British administration, and still more by the terrible cyclones of 1831 and 1832, when the sea-face was depopulated and large tracts of land were thrown out of cultivation. Since then there has been a great expansion of cultivation, and at the settlement concluded in 1900 it was found that the cultivated area had increased by no less than 40 per cent. in the preceding 60 years.

they derive from ordinary investment. The decline of public spirit amongst the land-holding class is very marked in this district. [Everywhere are to be seen large tanks which have been allowed to fall into disrepair, and often deliberately rendered ineffectual for irrigation purposes by a cut in the embankment. The water is thus partially drained, and the tank which once sufficed to irrigate 40 or 50 acres is now cultivated for a scanty crop of *dálua* rice.] Nowhere is the neglect so apparent as in the neighbourhood of Soso, where half a dozen such tanks, most effectually situated for the purposes of irrigation, are to be observed within the radius of half a mile. They are now half-silted, abandoned and neglected. It is not likely that the ryots should make any attempts to remedy this state of things unless they are encouraged by the example of their landlords. I am not aware of a single estate in this district where the zamindars have made any attempt worth notice towards the improvement of agricultural conditions. Even the old village embankments have almost everywhere fallen into neglect and inefficiency since they were abandoned by Government.

[“Since the Agricultural Loans Act came into force in 1885, it has done some useful work in this district. The Act is chiefly directed to supplying the wants of tenants in the matter of seed and cattle, and resort is constantly made to its procedure in the times of distress following flood.”]

The same conservatism in noticeable is the use of manure, for Manure though the Oriyá is to a certain extent alive to its advantages, he will not use it unless his ancestors have done so, and applies it less freely than the cultivators in other districts. As in other parts of Bengal, cow-dung is the most important manure, but its value is much diminished by the negligent manner in which it is stored, and the feeding of cattle is so poor that it is not rich in manurial constituents. Besides this, a great deal is lost by its conversion into fuel cakes, as, except in a few favoured localities, firewood is scarce and its high price renders its use prohibitive for the ryots. For the most part, therefore, cow-dung only finds its way to the soil in the form of ashes; and the only other manure in common use consists of household refuse. These manures are spread on the rice lands at the time of the first ploughing, and are also applied to sugarcane, betel and vegetables. Oil-cake is also occasionally used as a top dressing for these valuable crops. A strong prejudice exists against the use of night-soil and bone-meal, and chemical manures are practically unknown.

taken to remove all bones that the land may contain, as they are supposed to bring about ill-fortune and to cause the inmates of the house to die without heirs. The more superstitious even go through certain ablutions and ceremonies before re-entering their houses, if they happen to stumble across a bone in their fields.

## Rotation.

The scientific rotation of crops is not adopted as a principle of cultivation, but as a matter of practice rotation is observed in the case of the more exhausting crops. Sugarcane is never grown on the same land year after year, and when cultivated on *sārad* rice lands, it is alternated with paddy or follows a fallow, and is only grown on the same land once in four years.

## CATTLE.

The cattle are similar to those found in the southern districts of Lower Bengal, but, owing to deficiency of pasture, the stock is generally poor. Pasture grounds abound on the sea-board and along the foot of the hills. During the hot weather large herds of cattle are grazed in the low-lying lands on the coast, and in the rains are driven to the uplands on the west where there is good pasturage in the hilly ravines. Elsewhere the ground retains little moisture during the hot weather, and the grass being parched up by the burning sun, fodder is scarce. Cultivation has encroached on the grazing lands for many years past, though much has been done in the course of the recent settlement to reserve lands for pasturage; and the cattle have to be content with the dry stubble of the fields and such scanty herbage as they can find on the roadsides, river-banks, tank-banks and the boundary ridges of the fields; even the straw which might eke out the scanty supply of grass is largely used for thatching purposes. They are partly stall-fed on chopped rice straw while at work, but at other times have only what they can pick up in the fields or in the patches of waste found here and there, and they return home almost as hungry as when driven out to graze. They are generally under-fed and miserably housed, and no attempt is made to improve the breed or to prevent it from degenerating.

Buffaloes are bred for the milk which they yield in large quantities, but are not used for agricultural purposes. The sheep bred in the district are small in size with a short, rough wool. Goats abound, but are also small. Pigs of the usual omnivorous kind found everywhere in Bengal are bred by the lowest castes, especially as Ghusuriās, the swine-herd caste of Orissa. The only horses are the usual indigenous ponies; they are few in number under-sized and incapable of much heavy work. They are broken  
-1 are from-



The extension of cultivation has been greatest in the north of the district, where cultivation was in a backward state and the population was comparatively sparse, as indeed it still is; here the increase has been as great as 120 and 180 per cent. respectively in *parganās* Bhogrāi and Sahebbandar. It has been least in the lower central *parganas*, where there is little jungle left to reclaim, and where cultivation was in an advanced state even 60 years ago. Here the area open to a further extension of tillage is very small, and in the south-east of the district the liability of the country to floods prevents new areas of any large size being brought under the plough. Cultivation is, however, extending in the upper central *parganas*; and in the north of the district there is much virgin soil of excellent quality awaiting the advent of settled cultivation. In this tract a considerable area on both sides of the Subarnarekhā has already been reclaimed within recent times. These lands are protected by small embankments, which serve the double purpose of excluding the water of the tidal streams, which is brackish during the hot weather, and of retaining the water admitted during the rains. The lands are covered with heavy-jungle, which the tenant proceeds to clear after he has obtained a *patta* by the payment of *salāmi*. He is allowed to hold the land rent-free for three or four years, during which period the exclusion of salt water by the construction of an embankment renders the soil fit for cultivation. The lands are then charged with a rent of 4 annas an acre, rising after three years to the full rate of between Rs. 2 and Rs. 3. Such land has a rich virgin soil of excellent quality, and though the first crop, sown among tree stumps and patches of grass, is scanty, the lands, when fully broken up, yield an outturn sometime exceeding 30-maunds of paddy to the acre.

On the whole, cultivation has extended more rapidly in Balasore than in any other district of Orissa. The canal system does not appear to have been a special cause in this extension; the increase has been no greater in the protected and irrigated areas than elsewhere; and the enquiries made on the subject have failed to elicit any evidence of a substantial extension of cultivation to lands which but for the canal water were not likely to have been reclaimed.

At the present day, the area under cultivation in the whole district is 913,300 acres; there are only 55,900 acres of culturable waste, and the area not available for cultivation amounts to 300,000 acres.]

The Oriyā is a very conservative cultivator and has an apathetic indifference to agricultural improvements. Various experiments have been made from time to time at the instance of Government

with new crops, selected seed and modern implements, and an experimental farm has been started; but these experiments have had little effect on cultivation generally. The people still adhere to their old-fashioned ploughs, which turn up scarcely 6 inches of earth; and nothing shows their conservatism more clearly than their failure to adopt the improved sugarcane mills which have become popular almost everywhere else in Bengal. A few of the Bibia iron sugar-crushing mills are found round Bhadrakh, but elsewhere the ryot keeps to the old wasteful wooden mill.

This want of progress is due to the fact that centuries of inherited experience have taught the cultivator to raise the best crop possible for the minimum of labour which he is willing to bestow, and he regards with disfavour any change involving an increase of labour. He can secure improved crops without increasing his exertions, by the use of improved seed and labour-saving appliances; but these he will not introduce. Such conservatism is due to the natural idleness and apathy of the Balasore peasant, whom one account describes as "bigoted, wedded to custom, indolent and poor in the extreme." His dislike of new methods is also largely due to the fatalistic spirit produced by the liability of the district to suffer from natural calamities. "It is no wonder," says the Settlement Officer, "that the ryot whom the inclemency of the season may deprive of half his produce in the year should exhibit little desire for improved agricultural methods. They may yield him a few extra maunds, —no more increase than he can look for in a season which may turn out specially favourable; and the whole benefit of them may be lost, if the crop is to be destroyed by flood."

Regarding the working of the Loans Acts, [the following remarks of the Settlement Officer may be quoted:— "The Land Improvement Loans Act] provides for advances to any person legally entitled to make improvements, or with his consent, to any other person. [The Act was intended to provide chiefly for the excavation of tanks, for reclamation, and for the erection of embankments for the purposes of irrigation. No advantage whatever of it has been taken in this district, and no loans have been granted since the law came into force. This result is due to the ignorance of the tenantry regarding the existence of the Act, and regarding their legal right to make improvements and the extent to which they would reap advantage from them, as well as to their general apathy and poverty.] The zamindars, on the other hand, are averse to spending considerable sums on improvements which would yield them only an indirect return considerably less than

[Rinderpest is the most prevalent disease among cattle. In 1903-04 there were altogether 1,240 cases—a total exceeded only in two other districts in Bengal,—and in 1905-06 there were no less than 3,260 cases, or over one-third of the total number of cases reported for the whole Province.] Veterinary relief is afforded at a veterinary dispensary at Balasore, where over 1,700 animals were treated in 1905-06.

## CHAPTER VI.

## NATURAL CALAMITIES.

**LIABILITY TO NATURAL CALAMITIES.** Floods and droughts both occur in the district. The former result from the sudden rising of the rivers, which have their source in the hilly country to the west. In the hot weather they are nearly dry, and their beds consist of vast level stretches of sand, striped by long reaches of land-locked water, through which small streams meander from bank to bank. But in the rainy season, and especially after a storm has burst in the hills, they present an extraordinary contrast. They rise to a great height in a few hours, rush down with extreme violence, and cause floods, which are frequently of short duration, but quite unmanageable while they last. These rivers drain a large area, and the result is that they bring down an enormous volume of water, which the lower channels are often unable to discharge, and which spreads over the country far and wide except where it is checked by embankments.

Droughts are due to the deficiency of the rainfall. In most years the rainfall is sufficient for the needs of the district, but it is precarious, and its early cessation is fatal to the rice crop, on which the people depend. Practically the whole of the cultivated area is under rice, and other crops are scarcely grown at all. By far the greater part, moreover, of the rice crop consists of the winter or *sarad* rice; the autumn rice is comparatively a small crop; it is not grown at all in some parts, and it can nowhere make up for the loss of the winter rice. If that fails, everything fails.

There is, however, to a certain extent, a compensating influence in droughts and floods. While heavy floods drown the lowlands, the higher levels escape; though the fertility of the uplands is not increased in anything like a proportionate degree, as the very fact of their being higher causes the river water to flow off the more rapidly. If the floods are caused by an excessive local rainfall, as occasionally happens, the dry uplands are greatly benefited, but their extent is so small that their increased fertility does not compensate for the loss of the crops in the low-lying tracts. The

district does not present such extremes of dryness or moisture, that any considerable area ordinarily lies fallow in the uplands for want of rain, or upon the lower levels on account of the marshy character of the land. In years when there is a scanty rainfall, however, the low-lying tracts make up, in an important degree, by their freedom from flood, for the loss of crops in the arid higher levels. The *páts* or cup-lands produce magnificent harvests in dry seasons, while the higher tracts suffer severely. It may accordingly be accepted as a rule in Balasore, that in years of drought the sterility of the higher levels may often be compensated by the increased fertility of the lowlands. But in years of excessive floods the small amount of upland country cannot produce an increased outturn in any way commensurate to the loss of crops in the low-lying tracts. Generally speaking, therefore, a year of flood does more harm than a year of moderate drought.

Besides droughts and floods, the district is liable to a third form, and that perhaps the most appalling form, of natural calamity. Placed at the north-west corner of the Bay of Bengal, it is exposed to the full brunt of the cyclones, generated at sea, which travel in a north-westerly course up the Bay, and sometimes burst upon its shores accompanied by irresistible storm-waves.

These cyclones are generally generated during the transition periods antecedent and subsequent to the full establishment of the south-west monsoon, *i.e.*, during the months of April and May, October and November. Their most striking features are the great barometric depression in the centre and the magnitude of the storm area. These two causes produce a large accumulation of water at and near the centre, which progresses with the storm and gives rise to a destructive storm-wave, when the centre reaches the shelving coast. It then sweeps inland, and the damage caused is terrible and widespread.

Such destructive cyclones are fortunately rare, but so far back as we have records, we find that they have periodically devastated the district. On the night of the 27th May 1823 there was a furious cyclone, which is said to have been the third calamity of the kind within eight years. It is related that the sea suddenly rose and penetrated six miles inland, carrying with it large ships and sweeping away whole villages with every living creature in them, not even the vestige of a human habitation being left. But the severest disaster of this kind on record occurred on the evening and night of the 31st October 1831. Along the whole extent of the coast the country was submerged by a storm-wave 7 to 15 feet in height, which breached the Trunk Road at a point nine miles, as the crow flies, from the coast.

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Cyclones  
of 1823,  
1831 and  
1832.



According to an early account, "the whole country, for many miles on the sea coast, was inundated, and in this district alone, upwards of 22,000 lives were lost, and more than 50,000 head of cattle. The hurricane commenced in the north-east and blew from all points of the compass before it terminated—not only no houses, except those pueka built, were left standing, but the whole district suffered more or less; the damage to property, and loss of life was enormous. Mr. Ricketts, at that time Magistrate and Collector, made a circuit of the district immediately after the storm, and the names of more than 20,000 were registered as having perished. It is asserted the whole country was deluged by two successive waves, which carried everything before them. Many a poor wretch was overwhelmed ere he could reach high ground, or even ascend a tree. Dead bodies of men, women and children were found after the storm, interspersed with those of wild beasts, birds and bullocks. The wind blew at times with the greatest violence; sturdy trees that had borne the blast from many a long day were uprooted; pillars erected hundreds of years since were levelled with the ground; two of the walls surrounding the jail were blown in, and one out; an iron suspension bridge was blown from its moorings and carried some distance against the stream. The weather for two or three days previous to the storm looked cloudy and threatening, the following morning was clear and beautiful. The country looked as if it had been burnt up, every bush and blade of grass was blasted."

The distress and difficulties occasioned by this storm were scarcely surmounted, when a second great cyclone occurred in October 1832. On this occasion the cyclone is said to have been more violent, but the storm-wave less destructive. These calamities were followed by a drought in 1833, by which the failure of the food supply was superadded to the destruction of the rice crops by the cyclones. In these three years 50,000 human beings were destroyed by drowning and starvation. The whole sea-face was depopulated, in some parts no vestiges of cultivation or habitation remained, and many estates have never completely recovered. //

During the last sixty years, the district has not suffered to any great extent from the violent cyclonic storms which caused so much loss of life and property during the first half of the 19th century. The most violent of recent years are those which occurred in 1872, 1885 and 1887. In 1872 the storm was accompanied by a tidal irruption all along the coast, and some lives and a great number of cattle were lost. That of 1885 did far less damage in this district than in Cuttack, where a storm-wave 15 feet high, which broke over False Point on September 22nd, submerged 250 square miles and drowned about 5,000 persons. In Balasore the only tract

Cyclones  
of 1872,  
1882 and  
1885.

which suffered severely from this cyclone and sea-wave was the Government estate of Birso, where most of the tenants lost all or nearly all their crops. Here, as in other parts of the district over which the cyclone passed, a large number of houses and trees were blown down by the wind; the Engineer's house at Akshuapadā was entirely wrecked and its roof carried away bodily, the Europeans (one a lady), who were inside the house, being driven outside and exposed for hours to the violence of the storm and wind. With these exceptions, the sea-coast of Balasore, which is for the most part uninhabited and covered with jungle, did not suffer seriously, for the storm-wave was stopped by the embankment of the sea-coast canal, which saved hundreds of square miles from being submerged by salt water. The last great cyclone was that which burst upon the coast in the early morning of the 26th May 1887, when the sea swept over the coast canal embankment and penetrated within 2 miles of the town of Balasore.

It has already been mentioned that the rivers of the district are liable to floods, which are generally caused by sudden freshets before they enter the district, but are also sometimes due to excessive rainfall within it. The water which is poured down upon the plains from the western hills greatly exceeds the volume which the lower channels are able to carry off. The rivers issue from the hills heavily laden with silt; they have a rapid flow in their upper reaches, but when they reach the level plains, their speed is reduced; and their torpid current is no longer able to support the solid matter hitherto held in suspension. They accordingly deposit it in their beds and on their banks, which are thus gradually raised; and their channels proving insufficient to carry off the great volume of water which comes down after heavy rain in the table-lands of Chotā Nāgpur and the Central Provinces, they spill over their beds to a greater or less degree according to the chances of the season.

To the north the Subarnarekhā is frequently swollen by floods, which generally penetrate 4 miles from either bank and have been known to travel inland as far as 12 miles. The next river to the south, the Hāskurā, also occasionally causes considerable damage in the rains, when it carries away a large portion of the Subarnarekhā flood. The Burabalang again is liable to sudden floods, but the area liable to inundation is not extensive, lying chiefly to the north and north-west of the town of Balasore. Further to the south is the Kānsbāns, which is formed by the confluence of a number of hill streams, rising in the Tributary States. They drain a large area, and after heavy rains in the hills rush down with great violence and in considerable volume. These sudden

floods sometimes spread over a considerable area, but fortunately they seldom do much damage, as the water subsides quickly. The same may be said of the Salandi, which also brings down a considerable flood, but rarely causes damage.

It is far different with the Baitarani on the southern boundary of the district, which contains very little water in the hot weather, but passes an enormous volume in the rains. Down to Akshuapada the northern bank is protected by an embankment, but below this the whole country-side is exposed, while the embankment on the southern or Cuttack side prevents the discharge of water in that direction. The flood travels inland for 4 miles on the average, and sometimes as far as 8 miles; and in the rains the country from Dhāmānagar to Chāndbāli is a great sheet of water. A great portion of the south of the district is thus exposed to inundation almost every year, and the effects are more disastrous than in the north, where serious floods are of less frequent occurrence.

It would be a mistake to suppose that the floods are always destructive. They undoubtedly do harm in many ways, and the greatest of them have caused widespread havoc and destruction; but provided that they are not of long continuance or of great height, and that they come pretty early in the season, these inundations are productive of almost as much good as harm, as they are usually followed by excellent harvests. In many places the receding waters leave a fertilizing deposit of silt, which renews the productive powers of the soil and is of much benefit to the crops; and even the highest floods are of service, as their scouring action results in the clearance of silt on a large scale, and thus increases the capacity of the discharge of the various channels. It is only when their duration or height is extraordinary, or when they occur so late as to render re-sowing impossible, that very serious and widespread damage is done. A low flood or one of short duration does little harm, but the high floods which sweep across the rice-fields do great damage to the standing crop, as they generally occur in July, August and September, when the rice is in the first vigour of its growth or is in flower or nearing maturity.

The people of Orissa are accustomed to such visitations; they take shelter for the time being in comparatively high lands with their property and cattle, and after the subsidence of the water, they repair or rebuild their huts and transplant new seedlings in places where the crops are destroyed. Occasionally, however, the floods are so heavy and so prolonged that some parts of the country remain under water for weeks together, and the crops are destroyed or seriously damaged.

So far, therefore, as the effect on cultivation is concerned, the duration of a flood is almost of more importance than the maximum rise, and the period of the season at which it may occur is of even more importance. For this reason, the flood of 1868, which occurred after a fortnight's heavy rain and was the highest within the memory of the people, did not do much damage; it occurred in June, and the crops consequently did not suffer very greatly, though every river in the district overflowed.

In recent years the most disastrous floods are those which occurred in 1896 and 1900. In 1896 very great damage was caused by exceptionally heavy and prolonged floods; the country was under water for nearly a month, and the loss was therefore exceptionally great. The inundations were due to the rising of the Subarnarekhā in the north and of the Baitarani in the south. The flood in the Subarnarekhā began at the end of July, and when the water had subsided a little, attempts were made to repair the damage done and to transplant new seedlings; but in the last week of August the river again rose, sweeping away nearly all the transplanted rice. The central parts of the district along the Burābalang and Salandi suffered less than the northern tract, where about 300 square miles were inundated; but the south was seriously affected by the floods of the Baitarani river, and much damage was done to the standing crops. Some lost their houses and property, and there was more or less distress in all the tracts open to the ravages of the flood. Very little of the *bhadoi* crop was reaped, and the difficulties of the people were aggravated by the loss of the winter rice crop, for the fields had to be resown late, and a drought from about the middle of October to January was fatal to its growth. The result was, as described later in this chapter, a certain amount of scarcity and considerable distress among the poorer classes.

The last great flood occurred in the year 1900, when the water rose 18 inches higher than the highest flood previously recorded. Prompt measures were taken for the relief of the sufferers; boats were sent out to rescue the homeless ryots whose houses had been washed away; and they were brought into Balasore where they were clothed and fed until they were able to return to their villages. There was little loss of human life, but a large number of cattle were drowned, and special measures had to be taken to dispose of the carcasses which were found lying round the villages when the flood subsided. The agricultural embankments were breached and the crops suffered severely, especially in the western part of the district. The railway line was also breached in

several places, and the running of trains from Balasore to the north was stopped for some time.

#### FAMINES.

##### Early famines.

Previous to the inception of the Orissa canal system, droughts and famines were of frequent occurrence. Historical records show that terrible famines occurred in the 14th, 15th and 16th centuries; and during the rule of the Marathas the district suffered grievously from repeated famines. In the memorable famine of 1770 the land lay untilled, rice was not to be had at two seers per rupee, and while the people were dying by hundreds of thousands, the Maratha soldiery plundered and devastated the country. In 1780 the whole country had sunk into such absolute desolation that there was not a single place except Puri and Cuttack which could furnish even one battalion with provisions. In 1792-93 the miserable peasants again experienced the horrors of famine; scarcity followed in 1803; and when the country passed into the possession of the British its condition was wretched. A large portion of the land had been thrown into waste; many of the people had fled to the jungle; the population was insufficient to till the fields. Under British administration an era of prosperity has ensued; with an improvement in their material resources, the people have displayed far more staying power in bad years; cultivation has extended, and though there have been frequent droughts, they have only once culminated in famine.

##### Famine of 1865-66.

This was the famine of 1865-66. No such calamity had occurred for nearly a century; it had to be dealt with by a body of officials necessarily ignorant of the signs of its approach, unprepared to expect it, and inexperienced in the administration of relief measures; nor were the native inhabitants more aware of what was coming on them than the British officers. The rainfall of 1865 was scanty and ceased entirely after the middle of September so that the outturn of the great crop of winter rice, on which the country mainly depends, was reckoned at less than a third of the average crop. Food-stocks were low both because the quantity exported in 1865 was unusually large, and because the people, unaccustomed to precarious seasons, had not retained sufficient stores at home. When the harvest failed, the gravity of the occasion was not perceived and no special inquiries were instituted, while prices long remained so moderate that they offered no temptation to importers and forced no reduction in consumption on the inhabitants, till suddenly the Province was found to be almost bare of food. It was only in May 1866 that it was discovered that the markets were so empty that the jail prisoners and the Government establishments could not be supplied. But the southern monsoon had now begun and importation by sea or land



became nearly impossible. Orissa was at that time almost isolated from the rest of India; the only road leading to Calcutta was unmetalled and unbridged; and there was very little communication by sea. By great exertions, the Government succeeded in importing about 10,000 tons of food-grain by the end of November; and this was given away gratuitously, or sold at low rates, or distributed in wages to the starving population. But meanwhile the mortality among those whom this relief did not reach, or reached too late, had been very great; and it was estimated that nearly 1,000,000 persons had died. The mortality reached its culminating point in August, when heavy rains caused great suffering among the people, who were then at the lowest stage of exhaustion, emaciated by hunger and without sufficient shelter. Disastrous floods in Cuttack and in the south-east of Balasore followed these rains, and in all the low-lying lands the crop was lost. The harvest in the higher lands was, however, a good one; the new crop came into the market in September; and though the rate of mortality continued high for some time owing to cholera, the famine came to a close in November.

With this brief sketch of the general history of this disastrous famine, we may turn to a more detailed account of the progress of events in Balasore. The rice crop of Balasore in 1864 had been an unusually good one, and the exports enormous. In 1865 no alarm seems to have been felt regarding the safety of the cold weather or *sarad* rice crop till September, or even later, prices still ruling at 23 to 20 seers per rupee. At the end of October, however, complaints were received from the zamindars that the crops were ruined; that the ryots, being unable to obtain advances, could not pay their rents; and that the cultivators had blindly disposed of all their produce and kept no stock in hand. In November prices had gone up to 16 and 11 seers per rupee, and the distress became acute. Accordingly, a Relief Committee was appointed, but it was considered that no immediate measures of relief were required. Early in 1866 there was an extraordinary outbreak of crime; and the houses of those who were supposed to possess grain were attacked and plundered by their destitute neighbours. At the end of January, starvation appeared, the poor began to flock into the town, and the gratuitous distribution of food was commenced. In March and April the number of starving people in the town rapidly increased; and on the 2nd May the Commissioner reported that, owing to the extraordinary rise in prices, it had been for some months beyond the means of the poorer classes to procure sufficient rice to support life, and that they were eking out a miserable subsistence by eating

History of  
the famine  
in Balasore.

roots, herbs and leaves. The general population had fallen into a state of dejection, and had lost all energy. They were swarming into the villages, and there dying of cholera, dysentery or hunger. Even in Balasore town, the organized relief was utterly insufficient to meet the need of food. A distribution which the Commissioner witnessed in April was a scene of utter confusion; the starving crowds were beyond management; they seized the food as soon as they saw it, and even fell on the Commissioner, snatching from his hands and pockets the pice which he intended to distribute. So uncontrollable was the attack of the paupers on the pots of cooked food, that for a time the Committee was obliged to give out uncooked rice; but it was soon found that the rice so given was devoured raw, and the Committee therefore reverted to cooked food.

Government began to import grain in June, steamers being sent round by sea with large cargoes of rice, and by the end of July 22,000 maunds had been imported. Private importations by land from Midnapore into the north of the district were also considerable, but still hardly sufficient to meet the demand from day to day. Traders, too, began to import grain from Calcutta on pack-bullocks; but in the middle of June this traffic was stopped by the rains, which made the unmetalled roads impassable. Rice shops were opened early in July in the town and at several places in the interior for the sale of rice to all-comers at a low rate; but, unfortunately, the relief operations received a check, just at the time when they were in full operation, by a failure in the supply of rice. In August the stock became exhausted at a time when a vessel was lying at the mouth of the Balasore river with a cargo of 10,000 maunds of rice. Her draught of water, however, was so great, that she could not come within 8 miles of the shore; and the country boats and sloops could not get out to her without the assistance of a steamer. Unhappily, no steamer was available at the time; and ultimately bad weather set in, which drove the ship across the Bay of Bengal to Akyab. Thus the supply of rice was unexpectedly snatched away almost from the mouths of the people, just when it was most needed. The result was intense distress in the first half of August, and in the first 12 days of that month the police removed over 1,000 corpses from the town.

The distress in the Bhadrakh subdivision was equally great. In March and April grain robberies and incendiarism had appeared to an alarming extent; and in May it was reported that rice was selling at the rate of  $3\frac{1}{2}$  seers for the rupee, and that numbers of people were starving. Relief operations were started at Bhadrakh.

but it was not till the 10th August that rice arrived in sufficient quantities to enable the Committee to open centres in the interior, and to afford relief on any considerable scale. Heavy inundations added to the suffering. In the eastern part of the subdivision, the early rice crop was injured, houses were swept away, and the people perished of cold, exposure, and hunger, being cut off by the floods from access to supplies. The grain-dealers had closed their shops, declaring that they had no rice left. On the 25th August, rice was sold at Dhāmānagar, 10 miles south of Bhadrakh, at the rate of one rupee the seer, the highest price recorded at any time or place during the famine. Supplies were kept up at the relief centres, but with great difficulty, from Balasore; and in September a second inundation fearfully enhanced the distress of the people. On the 25th October it was reported that the distress was still very great,—that the country everywhere bore traces of famine, inundation and pestilence. Unsown lands, ruined houses and living skeletons met the eye everywhere. In the preceding week the daily total of persons receiving gratuitous relief at the eleven centres which had been established in the subdivision amounted to 203,000, giving a daily average of 29,000.

The coming in of the new rice crop gradually relieved the distress. On November 5th the Government sales were stopped; and the Collector reported that public health was improving and trade reviving. Soon after, the majority of the paupers dispersed and returned to their homes. The Relief Committee finally stopped operations on the 24th November. During the year the price of rice rose as high as  $2\frac{1}{2}$  seers to the rupee, and in the town of Balasore alone 10,000 paupers succumbed to starvation and disease. The total mortality was estimated at 217,608, altogether 31,424 deaths being ascribed to diseases resulting from starvation; 29,558 persons emigrated; and the total loss was, therefore, 247,167, or one-third of the population.

The maximum number of centres open for gratuitous relief, including 11 in the Bhadrakh subdivision, was 22, the distance between them ranging from 5 to 22 miles, but averaging 12 miles. Shops, for the sale of rice to those who had money, were opened at 7 places besides Balasore town, in which 3 shops were established. The daily average number of persons relieved from June to November was 26,497, *viz.*, 4,552 employed on light labour and 21,945 in receipt of gratuitous relief. The greatest difficulty was experienced in getting the people to work at all; and the Collector reported that the Oriyās would rather die than go even a few miles from their homes to procure work.

\* The Famine Commissioners in their Report give the following general review of the operations :—" After the famine had unmistakably declared itself, the local endeavours to meet it were crippled by want of funds. Until May, the possibility of obtaining assistance on such a scale as that on which it was subsequently obtained, was never contemplated; nor, indeed, was any adequate idea entertained of the dimensions which the requirements for aid would assume. "There were starving people in April," it has been said, "but we did not realize that they would come pouring in in such thousands." Nor indeed, could these numbers have been anticipated by the residents of Balasore, for many of the paupers came from other districts and from the estates of the Tributary Rajás. After the importation of rice was undertaken, it was more than once necessary to restrict the district operations, in consequence of the scantiness and uncertainty of the supply, and many of those who received the imported rice in June and July were probably too far gone to be saved. The number of paupers ascertained to have died in the town of Balasore alone between June and October was 8,900, of whom 6,132 died in the streets and 2,768 in the hospital. The mortality culminated in August, and was to some extent affected by the rains and inundations of that month.

"The mortality in and about Balasore town, and the famine sights to be seen there were more terrible than at any other place in Bengal or Orissa. The mass of paupers assembled was larger than it was elsewhere. The town lay in the way of many who left their homes in hopes of reaching Calcutta. Of these, many, exhausted and disabled by hunger and disease from going further, remained to swell the number who were fed by the Relief Committee. Subjects of the neighbouring Tributary Rajás also flocked in to share in the relief. These, as well as the travellers generally, arrived in such a condition that they were beyond recovery. In the early months, cholera, and subsequently, other bowel-complaints caused by bad and insufficient food, carried off hundreds; the least change of weather to cold or damp was immediately fatal. Many who were caught by bad weather at a distance from the places of distribution had not strength to crawl back to get their meal, and so died, where they lay, in out-houses or by the way-side. Even in fine weather, many were found dead in the morning where they had lain down to sleep at night; others, when they went to drink, fell into the water through sheer debility and were drowned."

Since this great calamity, Balasore has not been exposed to the strain of famine, but in 1897 there was some scarcity. The rainfall in 1896 was 9 inches above the normal, amounting to 69

inches, but its distribution was untimely. There was heavy rain in June, July and August, but there was an almost complete cessation of the rainfall from the latter part of September to the close of January. The consequence of these abnormal conditions was that there were successive and heavy floods followed by drought. The floods almost totally destroyed the *bhadoi* and winter rice crops in nearly all the tracts not protected by embankments. These were also breached in many places, and extensive tracts lay under deep water for a considerable period. The peasants endeavoured, on the subsidence of the floods, to recoup their losses by fresh planting, but the cessation of the rains from the latter part of September gave the finishing stroke in many places to what had escaped or been replanted after the flood. Want of rain in September and October was equally injurious to the *rabi* crops. The people did their best to meet the loss by raising *dālua* and other special crops, and the situation was also relieved by the railway works then in progress, which gave employment to a large number of the labouring classes. These works were supplemented by those started for the repair of the damages caused by the floods; and fortunately there had been good harvests in the two preceding years. Notwithstanding, therefore, the poor output of the crops, no rice had to be imported, but on the contrary the export of rice from Balasore increased. The result of this exportation at a time when prices were very high outside Orissa meant that the cultivators received good prices for such surplus stock as they possessed, though much of the profit doubtless went to middlemen. The classes that suffered most were the landless labourers and those depending on fixed incomes, including the *bhadralok*, whose circumstances were straitened by high prices. The wants of the former were, however, met to a large extent by the exceptional activity in railway and public works, and, where necessary, by district works that answered the purpose of relief works. The case of the very low castes and of those who ordinarily depend on private charity was the worst, and the former, being very poor, felt the pinch most acutely. For the ordinary recipients of private charity, where private charity was exhausted, gratuitous relief was afforded; so that the apprehended general scarcity was quietly tided over, and the district did not experience anything that can be called famine.

No part of the district, except the irrigated area in the south-west, is secure from drought in seasons of abnormally short rainfall. Drought most commonly occurs, though not in an aggravated form, on the upland stretching from Balikhand to the town of Palasore, at which point it widens across the district.

TRACTS  
LIABLE TO  
FAMINE.



Even here, however, there is a considerable quantity of low-lying land, so that the effects of drought are not very severe. According to official returns, the area regarded as liable to famine is 1,123 square miles, with a population of 563,500 souls; and it is estimated that the maximum number of persons likely to require relief in the event of serious famine is 197,000, of whom 65,500 would have to be provided for by relief works, while 131,500 would require gratuitous relief.

## CHAPTER VII.

## CANALS AND EMBANKMENTS.

THE first canal constructed in the district was that known as the Churāman Canal, a cut connecting the Matāi and Gamai rivers. This canal, which is also called the Ricketts Canal after Mr. Ricketts, one of the first Collectors of Balasore, was designed for the transport of salt from the salt lands in the south to the port of Churāman, whence it was shipped to Calcutta. It was commenced in 1825 and was completed, so far as it went, about the year 1826, when the project appears to have been abandoned. The route of this canal lay through the low-lying lands of *pargana* Ankurā, which it served in some measure to drain; but it soon fell into disrepair; a dam was built across it at Mandāri, 2 miles south of Churāman, and it has now silted up.

CANALS.  
The  
Churāman  
Canal.

The Coast Canal, which connects the Hooghly at Geonkhāli with the river Matāi at Charbātā, has a length of 71 miles in this district (excluding river crossings), and runs along the sea-face at a distance varying between 2 and 10 miles from the coast. It contains 8 locks, and is divided into 4 ranges, the first of which is fed from the Subarnarekhā river, the second from the Sārathā, the third from the second range by means of a syphon pipe in the bed of the Pānchpāra, and the fourth or lowest from the Kānsbāns and Jamkā inlets. The last three ranges have inlets and escapes to allow of the admission and exit of flood water, which thus passes across the canal to the sea. The canal was partially opened in 1885 and entirely in 1887, the work having been commenced in 1880. Its construction was undertaken because it was considered that it would be valuable as a protection against famine and remunerative as a trade route. It was anticipated that nearly all the import and export trade of Orissa would pass along it, and that it would yield a revenue of over 2½ lakhs; but these expectations have not been fulfilled, and the canal has been a dead loss to Government. It is no longer valuable as a famine protective work, and being fed by tidal waters, it is of no use for purposes of irrigation and does not benefit agriculture. It has been a failure as a commercial enterprise, and so far from defraying the interest on capital expenditure, it has not even

The Coast  
Canal.

paid for its working expenses. It is serviceable only for navigation, but with the opening of the railway passengers ceased to use this route, and the steamer service between Balasore and Chāndbali which used to ply along it has been discontinued. The country-boat traffic is, however, steadily returning and the revenue derived from it has greatly improved: indeed, the number of boats plying along it in 1905 is probably the highest on record. The canal is also very valuable as a protective work for keeping out the sea; and even, when it was still under construction, it rendered great service to the district south of the Burābalang by receiving and breaking the main force of the storm-waves which accompanied the cyclones of 1885 and 1887, and thus protecting the country inside the canal line.

This canal is a continuation of the older Hijili Tidal Canal in the Midnapore district, which leaves the Hooghly river at Geonkhāli 45 miles from Calcutta. There are 3 ranges between Geonkhāli and the place where the canal enters Balasore in its north-eastern corner. Range III continues to Bhograī on the Subarnarekhā 65 miles from Geonkhāli; and Range IVA leaves that river at Jāmkundā, 4 miles lower down, and ends at Pānchpāra lock on the river of the same name at mile 86. On the opposite bank of the Pānchpāra is Sulpatta lock, the entrance to Range IVB, which runs as far as Nalkul (mile 93) on the Burābalang, 7 miles from Balasore. Range V begins at Chārgāchiā, about 2 miles below Nalkul, and continues to the Mataī river at Chārbātiā (131½ miles).

e High  
Canal The only other canal in the district is the High Level Canal. This canal was designed to provide a navigable trade route between Cuttack and Calcutta, and also to irrigate the country through which it passes. It starts from near Cuttack, where there is a weir across the Birūpā, and runs thence along the foot of the hills north-eastwards, through the Cuttack and Balasore districts. It is the most picturesque of all the canals of Orissa, skirting the base of the wooded hills along the western boundary. The traveller looks eastward over almost by boundless rice plains, the level surface of which is broken only a few hills that here and there rise steeply from the surrounding country; while to the west is a vista of range upon range of rugged hill and valley in endless confusion.

The original scheme was to carry the canal across the district of Midnapore to meet the Hooghly river at Ulubāria, below Calcutta, a total distance from the starting point of 230 miles, so as to connect Cuttack with Calcutta by one long canal; but this great scheme was abandoned, and only three ranges have

been completed, of which the first and second lie within the Cuttack district and the third within this district. Range III, as it is called, was completed in 1891; it is a navigable channel, 19 miles long, and ends at the town of Bhadrakh on the Salandi river. It derives its supply of water from the Baitarani at Akshuāpadā, where there is a weir 1,029 feet long across the river. It is the only irrigation system in the district, and with its 7 distributaries, which are 67½ miles long, commands an area of 59,821 acres, of which 44,208 acres are actually irrigable.

The demand for canal irrigation in Orissa is in no way as great as in less favoured tracts, such as South Bihār. In the latter the rainfall is generally light and often irregular, and rice can only be grown to a limited extent without artificial irrigation. In Orissa, on the other hand, the rainfall is so steady that it is only in exceptional years that, for a large part of the country commanded, there is any urgent need of canal water; and there are only a few places where in most years artificial irrigation is absolutely essential for rice cultivation. The normal rainfall of 60 inches per annum being ample for their ordinary needs, the ryots do not consider canal irrigation so valuable as to make it worth their while to pay anything but a small water-rate or to have all their fields irrigated; and the demand for it is ordinarily not very great. [In the eyes of the cultivator the chief value of canal water lies not in any improvement it may render possible in the outturn of an ordinary year, but in the protection it affords in years of drought. In the case of the rice crop it is usually resorted to for the added security which it affords, as it is a method of insurance which minimizes the risk of loss; and it is also used to a small extent for the cultivation of special crops, such as sugarcane.] During the last 10 years, however, there has been a great expansion of the area under irrigation from the High Level Canal, Range III. In 1895-96 the irrigated area was only 10,105 acres; it had increased to 29,248 acres in 1898-99; in the 5 years ending in 1904-05 the average area irrigated was 37,700 acres; and in 1905-06 water was supplied to 42,784 acres, of which 42,000 acres were under rice.

The present state of affairs is very different from that prevailing before the introduction of the canal system. No provision existed against the calamities caused by want of rain, the tanks and other receptacles of local drainage were not used for irrigation, and the rivers were allowed to carry their waters unused to the sea. The people generally were reluctant to resort to artificial irrigation, and as an instance of this feeling, mention may be made of the course of events in 1869 in *pargana Randhiya-orgara*,

which suffered severely from want of rain in that year. The river Selandi runs through the centre of this tract, and when the drought made itself felt and the people were praying for help, the Collector asked them why they did not use the river water as a means of irrigation. They only replied that it was not the custom; that the proprietors of land on the river's banks would object to channels being cut through their lands for the purpose of carrying water to fields further inland; that it would be very hard work; that it would not pay; and that river water was not so fertilizing as that which came "from heaven". At all events, the river water was not used and the crops perished in consequence.

Canal  
adminis-  
tration.

This irrigation system is under the control of the Superintending Engineer, Orissa Circle, who is assisted in this district by the Executive Engineer in charge of the Akshuapada-Jajpur Division. The latter is responsible for the maintenance of the canals and the conduct of irrigation operations; and a separate establishment is entertained for the collection of the revenue. For this purpose, there is a revenue division in charge of a Special Deputy Collector, who sees to the assessment and collection of water-rates under the orders of the Superintending Engineer. The irrigated area is divided into blocks, the lease of all the lands in each block being arranged so as to lapse in the same year. Water is supplied to the cultivators on application on a prescribed form, the year being divided into three seasons, viz., the hot weather, from March to June, *khari*, from the 16th June to the end of October, and *rabi*, from November to the end of March. Dates are fixed for each season, and a lease or permit granted for the season is only in force for that particular period. Besides these season leases, there are long-term leases, or leases for periods up to ten years, granted at a somewhat reduced rate, which secure a supply of water from the 16th June to the 31st March in each year. These long-term leases are only granted for compact blocks defined by well-marked boundaries of such a nature that the leased lands can be clearly distinguished from the adjoining unleased lands, and also so situated that unleased lands will not be ordinarily irrigated by water supplied for the land included in the block. These boundaries are mentioned in the application for the lease, on receipt of which a special report is submitted to the Executive Engineer.

If the lease is approved, that officer issues orders for the block to be measured, and a detailed measurement of each cultivator's holding is then made. The lease is finally approved by the Executive Engineer who issues the permit.



but before this can be done, every cultivator who has fields within the block must sign his name against the area which has been measured, and which will be assessed in his name. Fields which cannot be ordinarily irrigated, or for which canal water is not ordinarily required, can be excluded from the block at the discretion of the Executive Engineer, such fields being duly noted in the *khasrā* or measurement paper. In these long-term leases water-rates are charged for the area measured and accepted by the cultivators, whether water is required or not. In *rabi* and hot weather leases, water is supplied on application, and water-rates are levied on the actual areas irrigated, and not necessarily on those specified in the application. In order to assist the Canal Department as far as possible in the assessment and collection of water-rates, influential men of the village, called "representatives" are appointed on the approval of the majority of the cultivators concerned. Their duty is to assist in measurements, in procuring and attesting signatures to applications for leases, and in collecting the rates. In return for this work, they are entitled to free irrigation of the lands in their own occupation within the leased area, up to a limit of 3 per cent. of the area assessed.

The present practice is to give long-term block leases, which often extend to 10 years, but to discriminate between the various classes of land forming a block. Thus lands lying so low that they never require irrigation, although water may often flow into them, are excluded from assessment; while a special rate of only 8 annas per acre is charged on those lands which derive benefit from irrigation only in exceptionally dry years. The rate charged for other land, or the ruling rate, was formerly Re. 1-8 per acre, but it was raised to Re. 1-12 in 1902-03; higher rates are charged for single season leases, or for water taken between 1st April and 16th June.

The necessity of protective works in Balasore will be apparent from the account given in the preceding chapter of the disastrous inundations which have from time to time swept over the district, and from the fact that from 1832 to 1867 Rs. 6,25,840 of Government revenue were remitted in consequence of floods.

Embankments intended to secure protection against such inundations appear to have existed in very early times, but whatever ancient works there were must have been isolated; and they were probably rather of the nature of mounds on which villages were built, while the country generally was open to inundation. Under the Marāthā Government the zamindārs were bound to maintain embankments, and for this purpose were allowed certain deductions from the revenue they paid. This system, however, proved very unsatisfactory. The old embankments were constructed

at those places where the banks were specially low, in order to guard against the spill of the rivers during an ordinary flood. By confining the spread of the water, they raised its level and so necessitated longer and stronger embankments to resist the floods; these new embankments in their turn again raised the level of the water, and thus led to the addition of more embankments. In 1831 they came under the charge of the Public Works Department; and it is evident that there was then no regular system of protective works, nor does it appear that any attempt was made to systematize them, or that anything was done beyond maintaining and repairing the embankments already in existence.

The greater number, however, were not efficient; many of them had been of insufficient height and strength to withstand heavy floods, and had fallen into disrepair and become useless, while others, though they afforded some protection in ordinary floods, and more or less protected villages from strong currents, were of little use in time of extraordinary floods and were generally liable to be breached. From 1866 onwards the embankments were much strengthened, but the question of the degree of efficiency in which they should be maintained was not raised till 1881. They had not been aligned on any scientific system, and it was physically impossible, without abandoning many of them and remodelling the remainder on an extensive scale, to render them capable of affording protection against high floods. The expenditure involved would have been prohibitive; and it was accordingly decided at the end of 1881 that the embankments should be kept up in the condition in which they then existed.

Since that year the embankments have been maintained in much the same condition of efficiency; in repairing them, care has been taken not to raise their height; and unauthorized additions have been prevented, as it was found that in previous years they had frequently been raised or lengthened, with the result that particular localities were protected, but damage was caused elsewhere. A further examination of the embankments was made in 1896 and 1897 in order that, when any obligations which might be held to rest on Government under the existing settlement might expire, only those embankments might be maintained which were productive of good or at least not harmful. Many embankments, it was found, were maintained simply because they were in charge of Government in 1881, and not because they were supposed to be of any real use to the country; in some cases there is no doubt that they were actually harmful, though they might afford some protection to particular places; and other embankments, though still nominally borne on the list, had already been practically

abandoned, as the country they were supposed to protect was covered by the works constructed in connection with the canals; As a result of this examination, many embankments were abandoned; and Government now maintains, under Act XXXII of 1855, 80 miles of embankments, 38 miles in the Akshuāpadā-Jāipur Division and 42 miles in the Balasore Division, where they afford effectual protection to 150 square miles of country. Besides these, there are a large number of embankments maintained by the zamīndārs, intersecting the district in every direction. Most of these are small and made without reference to any general scheme of protection from floods; and if they do good to the village in which they are situated, they often do harm to villages on the opposite bank, by throwing the set of the current on to the other side.

The principal embankments are the great Nūnā or salt embankment, the Bhogrāi or Subarnarekhā left embankment, the Sulsāpāt embankments on the lower reaches of the Subarnarekhā, and the Baitarānī embankment. The Nūnā embankment extends for 13½ miles along the sea-face between the Matai and Burabalang rivers, starting from the south side of the Coast Canal and ending in a sand hill at Balimunda. It is intended to keep out the sea, and protects an area of about 37 square miles from the storm-waves. Although valuable as a defence against the ocean, this embankment used to intercept the natural drainage from the land; and when the Gamai and the Kānsbāns came down in flood, it had to be pierced in order to let the water through. The sluicing of the Kānsbāns and Jamkā has, however, greatly improved the drainage of this part of the district, and it is no longer necessary to cut the embankment after every slight inundation. Although serviceable by restraining high tides in the Bay, it is quite incapable of resisting cyclonic storm-waves of any great height.

The Bhogrāi embankment was constructed in 1870 to afford protection from the flood-spill of the Subarnarekhā and replaced an embankment built by the British Government, which again had replaced an old embankment at the mouth of the Subarnarekhā constructed during the rule of the Marāthās. Both, however, had been constructed too close to the river to allow the water to escape freely in time of flood, and the Bhogrāi embankment was aligned further back, so as to give plenty of waterway for the floods, and thus prevent the overflowing, in the higher parts, of the rivers which formerly resulted from the narrowness of their outlets. The embankment starts about 5 miles from Bhogrāi as a continuation of the Coast Canal flood embankment, and goes

first north of and more or less parallel to the canal as far as Bhograi. It then continues on the opposite side of the canal along the left of the Subarnarekhā as far as Rankutā, where it terminates on a high sand hill. With the Joki embankment, its continuation in the Midnapore district, it is a very important protective work, being 15 miles long and affording effectual protection to an area of about 60 square miles.

The Sulsāpāt  
embank-  
ments.

The Sulsāpāt embankments are intended to protect the Sulsāpāt, a tract of country, 20 square miles in area, lying on both sides of the canal near Jāmkundā lock. The Coast Canal having cut through the Sulsāpāt, its embankments on either side for the first 9 miles south of the Subarnarekhā now form flood embankments, which keep out of the *pāt* the water of that river entering the canal at the escape crossings beyond the ninth mile. The other detached embankments are described later in this chapter in the account of the Subarnarekhā embankments.

The  
Baitarani  
embank-  
ment.

On the north of the Baitarani, from Mahurigaon at the foot of the hills to the weir at Akshuāpadā, there is a continuous embankment, over 18½ miles long, giving complete protection to the country east of it, the railway line, and the High Level Canal, Range III. This embankment is strong throughout its length, but during extraordinary floods the length between the weir and the railway requires to be watched. It has 3 sluices, through one of which flood water is admitted for purposes of irrigation; and there are 2 spill channels, one 4 and the other 6 miles above the weir; flood water from the former combines with that of the latter, and running along the toe of the embankment, falls again into the river.

Other  
embank-  
ments.

The other embankments are of minor interest, being works of little more than local importance which have been constructed in order to protect small areas from river or sea inundation. The following is a brief account of these works.

Sālandi,  
Rebo and  
Kapāli  
rivers.

Proceeding from south to north, the first are three small embankments on the right bank of the Sālandi river near Bhadrakh. [This river rises at no great distance from Bhadrakh, and being a hill stream, its flood is sudden and rises several feet in a few hours.] The embankments partially protect the civil station from ordinary floods, but flood water finding its way through the unembanked part enters the town through a causeway in the Trunk Road. A project is being considered for extending the right embankment round the civil station; and the question of making an embankment on the left bank below the Trunk Road crossing has also been discussed, but it seems likely that, by restricting the river channel, the right bank would be endangered.

On the right bank, some two miles above Bhadrakh, there is a continuous embankment,  $7\frac{1}{2}$  miles long, which protects a small area of country, the High Level Canal, Range III, 14th to 16th mile, and the Bhadrakh branch canal. This embankment is exceptionally strong, and has several sluices, all intended for draining the country. There are no embankments along the Rebo, a small stream rising in the Keonjhar hills, which falls into the Kapāli river; it is a mere drainage channel and hardly spills over its banks. In the upper reaches of the Kapāli, there are several small embankments, which appear to have been made to admit of impounding water for irrigation. They are of little use and of no importance, and are no longer maintained by Government but left to the zamindārs. Down to the canal aqueduct the stream is, like the Rebo, practically a drainage channel, hardly spilling over its banks, but below the aqueduct the country is subjected to slight flood, and there are two small embankments giving protection to village sites.

The Matāi, which is flooded by local drainage and by water flowing in through the Ricketts canal, has no embankments, but further north a portion of the Kānsbāns has been canalized and embanked on both sides down to the sea, where a sluice of 11 vents has been constructed for feeding or draining the canal as may be required. Just beyond the spot where the Gamai crosses the canal, the Nūnā embankment, mentioned above, begins; and further north beyond the canal to the sea, embankments have been made on both sides of the river Jamkā, and a sluice of 11 vents, similar to that on the Kānsbāns, has been constructed for feeding or draining the canal.

Along the Burābalang there is an embankment 1 mile long on the right bank, from Chārgāchiā lock to the road from Balasore to Chandipur, which affords partial protection to a small area. There are three embankments on the right bank of the Pānchpāra, viz., the Sulpatta, Sildā and Channuali embankments, which protect the cultivated fields from the ingress of salt water at high spring tides. North of this, the old channel of the river Sārathā beyond the canal is embanked on both sides to the sea, where there is a sluice of 10 vents for feeding or draining the canal.

In the north there are several embankments intended to protect the country from the floods of the Subarnarekhā and to keep out water from the Sulsāpāt. On the right bank of that river, nearly 16 miles above Jamkundā, is the Darbori embankment about  $1\frac{1}{2}$  miles in length, which traverses a low piece of land and protects an area of  $13\frac{1}{2}$  square miles from floods.

Matāi,  
Kānsbāns  
and  
Jamkā  
rivers.

Burā-  
balang,  
Pānchpāra  
and  
Sārathā  
rivers.

The Subar-  
narekhā.



There are also 4 small detached embankments, mentioned below, giving partial protection only; in ordinary floods they protect an area of 34 square miles, but in high floods the water enters at many places where the ground is low. From Jāmkundā to Panchrukhi the Jāmkundā embankment runs along the right bank of Subarnarekhā for a little over 2 miles, and protects the Sulsāpāt from flood. The Baras embankment, which commences in Jāmkundā village and ends at Baras, half a mile distant, also protects the Sulsāpāt; and so does the Panchpālī embankment which connects with the canal in the 78th mile. It is  $3\frac{1}{2}$  miles long, and has three sluices for drainage only. There is, besides these, a short embankment on the right bank about 6 miles below Jāmkundā, between villages Nagari and Ambachua, which protects about  $5\frac{1}{2}$  square miles.

**EFFECT OF  
EMBANK-  
MENTS.**

*Northern  
parganas.*

In conclusion, the following remarks may be quoted from Mr. Kingsford's Settlement Report on the effect of the embankments on various parts of the district. As regards the country to the north, he considers that the construction of the Joki embankment in Contai, the strengthening of the Bhograi embankment, and the construction of the Coast Canal have tended to increase the liability to flood on the west side of the Coast Canal.

"In Koardāchaur nearly one quarter of the area is liable to almost annual flood. No doubt these lands were always covered with a considerable depth of water, and the Coast Canal is not therefore the cause of the increase in the proportionate liability to flood, except in so far as it has raised the height of flood level. As the embankment is now effective, it is probable that some increase has been caused in the height and duration of floods of unusual magnitude. I do not, however, think that the circumstances of this *pargana* have materially deteriorated, except for the fact of cultivation having extended over lands specially liable to flood."

Turning to the *parganas* on the south bank of the Subarnarekhā and upon the west of the Coast Canal, he says:—"In years of high flood the rivers Subarnarekhā and Hāskurā discharge over the *parganas* to the south-east, and the water runs across the Basta-Baliapāl road into Koardāchaur and Sātnalang. It is then banked up by the Coast Canal, and passing southwards, finds vent through the open escapes on the north of the Panchpārā river. That the water is banked up needs no demonstration to any one acquainted with this part of the canal. Did the embankment not exist, the water would escape towards the sea. Under existing circumstances, it stagnates until it reaches the level of the escapes to the south, where there is no embankment, the canal

running through higher ground. It is not until it reaches this higher level that the flood can obtain egress. Along the low lands upon the Coast Canal, there is, therefore, occasionally some loss of crops, but the distance is so far from the Subarnarekhā that no violent rush of water occurs. Moreover, the embankment protects the country to the west from the penetration of tidal waters, and the benefit conferred in this respect probably equals the disadvantage. Great damage occurs in *parganas* Kismat Katisāhi, Katisāhi and Sāhabandar through flood, erosion and occasionally by sand deposit. In Sāhabandar, particularly in the area enclosed by the old and new channels of the river, the surface of the soil is in a state of continual change owing to the action of the water. The course of the river is erratic, and its action deposits in some places sand and in others silt, so that the cultivation varies from year to year. In Daradachaur and Nangaleswar less damage is caused, and throughout these and the other *parganas*, excepting those directly upon the bank, silt is deposited in large quantities, and when the flood occurs early in the year as in 1898 its results are entirely beneficial. It remains to note *pargana* Bhograi, which 60 years ago was exposed both to the Subarnarekhā floods and to irruption of the sea, was partially protected by sand ridges and an old Marāthā embankment, but the protection now afforded is effectual, except upon the lands situated between the embankment and the river. This is indeed the only protected tract in the district with the exception of Soso and Manjuri in the south-west."

As regards the south of the district, Mr. Kingsford remarks—  
 "The construction of the Baitarani left embankment above Southern parganas. Akshuāpadā, while protecting the *pargana* of Soso, naturally raised the river levels below Akshuāpadā; subsequently, the Baitarani right embankment, reaching 17 miles below Akshuāpadā, was erected in order to protect the irrigation works of Jājpur, and this was completed between 1891-92, thus closing the rivers Benga, Kia and Pātpur, which previously carried off much of the Baitarani water to the south. In the year following it was found necessary not only to raise the right embankment, but also to cut the old agricultural embankments of Nadiāgaon and Phalpur, in order to allow free egress of the water into Bayāng. The result of these measures has been to throw open to disastrous flood several villages in Bayāng previously protected, and to raise the flood level throughout the tract.

"It must be obvious, to any one who examines the facts, that the embankment has caused an immense increase in the volume of water thrown into Dhāmnagar and Bayāng. The flood traverses

nearly the whole of the latter *pargana* and Káimā, and part of it passes towards the north-east across a portion of Senāut and through Bherā until it meets the Matai. Here the water is banked up, and the drainage from the west of the Coast Canal, finding no outlet, stagnates in the low-lying lands of Ankurā. The effect is most severe in Bayāng. Nearly 1,000 acres of cropped lands previously protected have been exposed to flood by the cutting of the agricultural embankments referred to, while the depth of flood over another 27,000 acres of cropped area has been considerably increased. It has been said that the flood-water of Bayāng causes the Matai to bank up, and results, therefore, in the stagnation of the whole drainage of Ankurā. There is, I think, no doubt that the construction of the Coast Canal has contributed to this result by barring egress to the east, except by escapes, the height of which is too great to permit the water to flow off until it has reached a level destructive to the crops.\* There has undoubtedly been interference with the drainage of the Gamai,† which, instead of flowing off directly to the sea, is now forced down the west bank of the canal into the Matai. The Ankurā-pāt or low-lands along the canal must always have been subject to flood; but I gather from the old records that the loss was not excessive, whereas at the present day the crop over a great portion of this *pargana* is precarious. On the other hand, the condition of two of south-western *parganas*, Soso and Manjuri, has much improved owing to the construction of the Baitarani left embankment, which effectually protects the area from flood."

\* Since Mr. Kingsford wrote his report, the crests of many of the escapes on Range V of the Orissa Coast Canal have been lowered, and the stagnant drainage complained of has thereby been considerably improved.

† Regarding this statement, Mr. A. S. Thomson, Superintending Engineer, Orissa Circle, writes as follows:—"The benefits conferred by the canal banks, in preventing the tidal waters of the sea penetrating the basin and banks of the Gamai river, probably equal the disadvantages caused by the Coast Canal obstructing its free drainage to the sea. In course of time, the land must rise from the annual deposits of silt, and the low area now complained of will eventually disappear."

## CHAPTER VIII.

## RENTS, WAGES AND PRICES.

THE rents fixed at the last settlement were not based on the classes of soil under cultivation, as it was found that the villagers could not point out, with any degree of accuracy or certainty, definite tracts of lands bearing a uniform rent. Eventually, it was decided to assess rents on the basis of the existing rates; the method adopted being the proposal of a fair rent, *i.e.*, either the existing rent or an enhanced rent, for the acceptance of the tenant, the immediate settlement of that rent if accepted by him, and in all cases in which the tenant declined it, the formal settlement of a fair rent under the provisions of the Bengal Tenancy Act. The method was simple and involved as little disturbance of the *status quo* as was possible; it avoided the risk of inequalities of assessment due to the idiosyncracies of individual officers; and it was open to any person dissatisfied with the rent proposed to apply for the settlement of a different rent, and to adduce formal evidence in support of his contentions. Under this system, fair rents were settled for the whole body of tenants in the temporarily-settled estates; altogether 370,290 holdings with an area of 692,200 acres were thus dealt with, the average rent throughout the district being Re. 1-10-7 per acre.

At the settlement of 1837, Balasore was assessed lightly, the population being scanty and the land liable to flood and interspersed with jungle, while a large area had been thrown out of cultivation owing to the disastrous cyclones and storm-waves of 1832 and 1833. The rent of the *thāni* ryots, *i.e.*, the resident cultivators who had the best land and had special privileges, was fixed at Re. 1-11-8 an acre; while the incidence of the rents of the *pāhi* or non-resident ryots, who held over 44 per cent. of the assessed area and were practically tenants-at-will, was Re. 1-2-11 an acre. During the 60 years following this settlement, there was a very great development in the resources of the country; the area under cultivation increased by 40 per cent.; and it is noticeable that the incidence of the rents paid by *pāhi* ryots rose from Re. 1-2-11 to Re. 1-11-1 an acre; for these rents have

always been more or less competition rents, reflecting with much accuracy the general conditions prevailing.

*Thāni*  
ryots.

At the last settlement the rents of *thāni* holdings were enhanced wherever they were found to be lower than the *pāhi* rents; and the excess area was everywhere assessed to rent at the village rate, after making an allowance of 10 per cent. to cover any excess due to strictness of our system of measurement. In the event, the average incidence of the rent settled for *thāni* holdings was Re. 1-13-8 per acre, and for *thāni-pāhi* or mixed holdings Re. 1-11-5, the enhancement on the existing rent being 9-6 and 6-9 per cent. respectively.

*Pāhi*  
ryots.

The general development of the district had naturally been accompanied by an increase in the rents of the *pāhi* ryots, the only class for which rents were not fixed for the term of the previous settlement. The zamindars had consequently enhanced them considerably during the currency of that settlement; and as they were held throughout the new proceedings to be competition rents, they were not liable to any general enhancement. They were, however, enhanced on the ground of excess area or where any particular rents were found to be unreasonably low, either through collusion or fraud, or because they were specially granted as beneficial rents by the zamindars. The average rent finally fixed was Re. 1-13-5, the enhancement on the existing rent being 10-1 per cent.

Other  
tenants.

Among other classes of tenants whose rents were settled may be mentioned the *jamābandi kharidādars*, *chāndinādars*, *nisfi-bāziāftidars* and *kāmil bāz āftidars*. The *jamābandi kharidādars* are holders of land which, in theory at least, was formerly reclaimed. At the previous settlement they were treated as subordinate proprietors, their rents being calculated at a certain percentage of the assets they received; but at this settlement they were dealt with as tenure-holders under the Bengal Tenancy Act, and their rents were settled accordingly, a percentage equal to that granted to them at the previous settlement (20 to 30 per cent. of the full rent) being fixed. The incidence of the settled rate per acre was Re. 1-2-2, the enhancement being 58 per cent. No general enhancement was made of the rent of ryots holding *chāndinā* tenancies, i.e., the holders of homestead lands, the incidence of which had risen from Re. 1-15-9 to Rs. 3-7-3 within the last 50 years; but excess areas were assessed to rent at special rates, thus causing a nominal enhancement. The *nisfi-bāziāftidars* and *kāmil bāziāftidars*, or holders of resumed rent-free lands, had been assessed at the previous settlement at half rates and full rates respectively. Both these classes were dealt with as ryots



whose special privileges had expired at the last settlement, but in consideration of the very low rents at which they were holding, and to prevent the hardship which would have been caused by too sudden an enhancement, a strict limit was imposed on the enhancement; and they were eventually assessed to rents much below those paid by *thāni* and *pāhi* ryots. The incidence of the settled rent per acre in the case of *wisā-bāzīdār*s was annas 13-11 and of *kāmīl bāzīdār*s annas 14-10, the enhancement being 197 and 57 per cent. respectively. The increase of the rents of the former, which is *prima facie* extremely large, is due to the fact that these people, who had been given holdings at what were supposed to be half rates, were found to be paying what were really pepper-corn rents. The rents now fixed are under a rupee an acre, which is less than half the market value of the land.

In the final report on the survey and settlement of Orissa, Mr. Maddox states:—"There is little, if any, evidence of general enhancement of rents on the ground of irrigation or of higher rates in irrigated than in unirrigated villages, though there is evidence that rent-rates have risen more in the protected and irrigated tracts than in the unprotected and unirrigated. There is, however, some reason to think that irrigation causes the lowest rents to rise, and in fact has a tendency to equalize rents through an irrigated area. The increase of cultivation is certainly no greater in the protected and irrigated group, and all the enquiries made have failed to elicit any evidence of a substantial extension of cultivation to lands which but for the canal water were not likely to have been reclaimed. Amidst the mass of conflicting information on the subject of the increase of rent-rates, one fact alone can be held to be abundantly proved, and that is that the cases in which a zamindār has openly enhanced rents on the ground of the accessibility of canal water or has imposed an irrigation cess of his own are very rare." Elsewhere in India the rents of irrigated are sometimes two or three times those of unirrigated land; but in Balasore the exhaustive enquiries made during the settlement showed that rents were not higher in irrigated than in unirrigated areas.

It was only to be expected that the rents of a very large number of tenants holding at privileged rates, which had remained untouched for 60 years, would have to be enhanced at the last settlement; for it was known that cultivation had largely extended during the same period, and that there were considerable areas in the possession of both landlords and tenants that had never been assessed to rent or revenue. The general result

Rents in  
irrigated  
lands.

General  
results.

of the settlement of rents was that the incidence of rent was raised from Re. 1-6-10 to Re. 1-10-7 per acre, the enhancement being 16 per cent.,\* while the settled assets were altogether Rs. 11,51,400, as compared with Rs. 9,88,800, the assets existing before the settlement. The enhancement actually imposed on the important class of *thāni* ryots amounted to only 9-6 per cent. The rents of these cultivators had undergone no change for a period of 60 years, and though a large number disappeared in the famine years of 1865-66, it was held that this was no reason why those who held their ground should be absolved from contributing some share of the large rise in the value of their produce which had resulted from State-constructed improvements and settled government. The incidence of rent per acre is lighter than in Cuttack and Puri, though the enhancement was greater than in either of those districts. The difference was due chiefly to the larger amount of excess area assessed to rent and to the fact that the existing assessment was low owing to the disastrous floods which had thrown much land out of cultivation, to the scantier population, and to the nature of the agriculture of the district, where the cultivated area for the most part grows only one crop, viz., *sarad* rice.

#### PRODUCE RENTS.

Rents in kind are still paid for a certain proportion of land. The commonest form of produce rent is that known as *dhulibhāg* (literally, a sharing of the dust), which implies an equal division of the grain as well as of all bye-products. Under this system the entire cost of cultivation is borne by the tenants, and when the crop comes to maturity, it is reaped in the presence of the landlord's agent and is carried by the tenant to the threshing floor, where an equal division is made in the presence of both parties. Sometimes, however, instead of the crop being actually divided, it is appraised on the ground, and half the estimated value in cash is taken by the landlord as his share. It is estimated that in the case of ordinary rice land, the landlord's share is about 8 maunds of paddy, worth Re. 1 to Re. 1-4 per maund at harvest, so that the rent actually paid would be equivalent to Rs. 8 to Rs. 10 in cash. A less common form of produce rent is that designated *phalbhāg*, i. e., a division of the fruits and grain only, the straw and other bye-products being retained by the cultivator.

Besides the *dhulibhāg* and *phalbhāg*, there are two other classes of produce rents, the *panidhān* and *sanjā*. The former is an arrangement by which a portion of a cash rent is payable in kind, e. g., a tenant with a nominal rent of Rs. 4 may have to pay Rs. 3 in cash and Re. 1 in grain. The landlord fixes the rate,

so that the tenant generally has to pay something more than he would obtain for his grain in the open market. *Sanjā*, i. e., a contract, is a term applied to the payment of a fixed quantity of agricultural produce. The latter generally amounts to about 6 maunds per acre, which would fetch Rs. 6 in a good year and Rs. 9 in a bad year. The quantity fixed has to be paid whether the season is favourable for the ryot or the reverse, and the rent thus presses most heavily on him when he is least able to afford it. Fortunately, this system is rare in Balasore.

[The wages obtained for labour have increased greatly during the last half century, especially in the towns. In 1850 the wages of ordinary day-labourers were only 1 anna a day. Carpenters' wages amounted to 2 annas a day, and smiths were contented with  $2\frac{1}{2}$  to 3 annas a day. Away from their villages, adult male day labourers now earn a daily wage of  $3\frac{1}{2}$  annas, females 2 annas and boys  $\frac{1}{2}$  anna; and carpenters, masons and blacksmiths 6 to 8 annas according to their skill. The rise has been greater in the case of skilled than unskilled labour, owing to the increasing demand for masons, carpenters and blacksmiths created by the linking up of Orissa by rail with Bengal, the resultant communication with large centres of industry, and the growing preference for masonry structures in the towns. The increase is more noticeable in the towns than in the villages, where lower wages obtain.] WAGHS.

In his own native village, a skilled labourer gets from 4 to 6 annas and an adult unskilled labourer 2 annas a day; but the amount of the wages paid depends on the demand for labour, the nature and amount of the work done, and the size and position of the village, i. e., whether it is in a remote and out-of-the-way tract or in the neighbourhood of a town. [For making and repairing agricultural implements, carpenters and blacksmiths, who are still an essential part of the village community, are always paid in kind, the annual payment averaging about 9 seers of rice from every client; and the day labourer, when paid in kind, gets varying quantities of paddy equivalent to 2 to  $2\frac{1}{2}$  seers of rice. Measured by the quantity of grain given, there does not appear to have been any increase in the wages paid to agricultural labourers during the last 30 years; but owing to the enhanced price of food-grains, the money valuation of wages in kind has increased by 90 per cent. On the other hand, though the wages paid in cash have increased considerably, they have not risen in the same proportion as the prices of staple food-crops, and they are now slightly less in value than wages in kind; the latter are, therefore, preferred by the village labourers, and it is difficult to obtain a

coolly in the mofussil who will work for cash wages in the sowing and reaping seasons, when wages in kind are freely given.]

Labour-  
supply.

As regards the supply of labour, the following extract from Mr. Foley's Report on Labour in Bengal (1906) may be quoted—  
“There is considerable emigration to Calcutta, especially for handling goods and for all sorts of engineering work. I was informed that only the low castes went to the mills, because the castes are mixed together there; whereas the higher castes, who are chiefly Brāhmans, Khandaits, Chāsas and Goālās, wish to be separated, especially in their dwellings, from the lower castes. Any amount of labour, I was informed, could be obtained between January and July, when the people would want to return for their cultivation, since otherwise they would have to pay labourers to cultivate for them. Oriyā labour is generally obtained through *sardārs*, who live in Calcutta or the neighbourhood and have agents in the district: some of them make a very large income by the percentages of the wages they take, and labour would be cheaper and more satisfactory, if it was recruited direct through relatives, etc. Oriyās will leave home so long as they go with some one in whom they have confidence. The chief emigration is by sea, *viâ* Chāndbāli, the crops in the southern part of the district being liable to be damaged by floods and drought: along the sea coast also the land is poor on account of the deposits of salt. There is also emigration by rail, especially from Bhadrakh and Balasore, and also by road through Midnapore. From Soro and the north of the district a considerable number of people go to the Sundarbans to cut the crops, leaving in November and returning in March. The chief centres whence labour can be obtained appear to be Balasore, Bhadrakh, Bāsi-debpur, Soro, Dhāmnagar and Chāndbāli.”

PRICES.

Price of rice in seers per  
rupee.

1837-51	...	49-8
1852-66	...	42-7
1867-81	...	24-8
1882-96	...	19-8
1896-1906	...	17-7

the rate of wages, and the figures in the margin will show how enormously the price of rice, the staple food of the people, has grown during the last century in Orissa. It will be seen that the greatest increase took place after 1866, and it is indeed a common saying

that the high prices which commenced during the famine have never left the land. This is to a certain extent true, as after that time came a period of great activity in the improvement of the roads and harbours, the construction of canals, and the gradual development of foreign trade; and a steady rise of prices set in after this transition period. During the last quinquennium.

prices do not seem to have been much affected by the opening of the railway, probably because the country had already been opened out by the canal system to a brisk export trade in rice by sea. The effect of the railway on the general trade of the country and its potential value as a means of making prices independent of local demands are, however, unquestionable. There has also been a great increase in the price of other agricultural produce, of pulses, *ghā* and tobacco; but, on the other hand, cotton yarn and oil have cheapened, while there has been but little change in the cost of sugar and of betel-nut, which every Oriyā chews. In recent years also the average price of salt has shown a gradual fall owing to the reduction of the duty and improved facilities of communication; this fall has been very marked since the further reduction made in 1905, and consumption is increasing.

In the Final Report on the Survey and Settlement of Orissa the general standard of living is described as follows:—"The Oriyā cultivator is content with very little, and that he generally gets. A full meal of rice once a day, taken with a little salt, some pulse or vegetables, and perhaps fish, suffices him, and he eats cold in the morning what is left over from his evening repast. Animal food is a luxury, but well-to-do men eat a little mutton and goat's flesh, and all classes eat game whenever they have the luck to kill any. The poorest classes take, to supplement their rice, boiled *kudhi* and *mamā* cakes, and find a substitute for vegetables in the many herbs and grasses that grow wild, and it is very few indeed who cannot fill their bellies with food which, if not appetising, is certainly satisfying. If the harvest fails or supplies run short, the cultivator finds in the *mahajan* a banker always ready to advance money on good security, and able and willing to tide him over hard times, provided there is no abnormal general distress; and the history of the floods and drought of 1896 shows that the agricultural community can withstand very serious calamities, if the bad season is followed by a good harvest in the next year."

MATERIAL  
CONDITION  
OF THE  
PEOPLE.

In spite of their indebtedness and of the liability of their crops to injury from droughts and floods, the agricultural classes have more resources than any other, and they constitute the majority of the population. Not only have they better means and better credit than the labouring classes, but being in the habit of keeping grain for home consumption, those who have crops of some kind are in a better position than the non-agricultural classes when grain is scarce and prices are high. They have gained both by the better price they obtain from their surplus

Agricultural  
classes.



produce and by the smaller price they pay for imported luxuries, whereas formerly they could realize comparatively little from plentiful harvests, for in the absence of means of export the latter sent down prices and glutted the market with an unsaleable commodity. Although, therefore, the state of the cultivating classes as a whole cannot be said to be one of plenty, certain sections enjoy a fair measure of prosperity.

Labouring  
classes.

The labourers, in the villages have been equally benefited by the rise in the prices of food-grains, as wages are still paid in a great majority of cases either wholly or partly in kind. This system is particularly suited to an agricultural district like Balasore for whatever fluctuations may take place in the market, the labourer's wage remains the same.

There are three kinds of agricultural labourers (*mulās*), viz., the *bāra-māsia*, *nāg-mulā* and *thikā-mulās*, of whom the first two are paid entirely in kind. The *bāra-māsia* is a labourer hired for *bāra mās*, or twelve months. He receives board and lodging in his master's house, and an annual wage of Rs. 12 or Rs. 15, of which a portion is often advanced to him free of interest, besides four garments (two *karujās*, one *gānchā*, and one *chādar*) every year. The *nāg-mulā* does not live or eat in his master's house. He receives half a *gauni* (5½ seers) of paddy for every day's work done by him, besides an annual present of a new cloth (*gānchā*) and a cast-off garment of his master's. He is also allowed a plot of land (called *betā*) to cultivate for his own benefit, free of rent. Engagements for one year's service are made with the *nāg-mulā* in the month of Phālgun, at the *Dol* festival; and he receives on that occasion a loan of money, varying from Rs. 2 to Rs. 5, free of interest, which is repaid at the termination of the engagement. Such engagements are often renewed year after year for several years, the loan being repaid only on the final cessation of the contract. These coolies give the whole of their time to their master's business. A subdivision of this class, called *ādha-mulā*, give only half their time, and receive only half the *betā* land and one cloth, the daily allowance of paddy being the same as with the *nāg-mulā*. The *thikā mulā* is employed by no master in particular, but does day work wherever he is wanted, receiving in return a money wage, amounting to about 2 annas a day.

Here, as in other parts of India, the lot of the ordinary unskilled day labourer is rather hard. Spending what he earns from day to day, he has very little to pawn or sell in times of distress, and he is therefore the first to succumb in time of scarcity, unless he is carefully watched and given work within easy reach. Unlike the Bihāri, the Oriyā does not move with his family in

search of work, and no labourer cares to go to a distant place for employment leaving his family uncared for and with the prospect of only earning enough for himself. The *kuthiā* or *haliā*, i.e., the unskilled labourer who is engaged by the year and paid daily in kind, is however better off than the day labourer. He has a better man to look after him, who, if an old master, does not forsake him till he is himself reduced to the very last straits; and besides this, he is generally allowed to hold about half an acre of land free of rent.

As regards skilled labour, the village artisans who never go out of the village form a recognized part of the village organization, and are also indirectly supported by agriculture. The ordinary artisan with a family of five earning 7 annas a day does not spend more than 5 annas, and is thus able to lay by something, which enables him in time to invest his savings in land, the great ambition of every man in Orissa. There is hardly any really skilled artisan, who has not, if he is a man of the *mofussil*, some land, and if a man of the town, some money-lending.

[ The houses of the cultivators consists of four mud walls enclosing a court, and used as the gables of little rooms which line the court inside. A Balasore husbandman has usually at least five of these little apartments,—one for his cows, another for his cook-shed, a third for storing his paddy, and two rooms for sleeping and general use. There is generally a verandah outside the wall on both sides of the principal door for receiving strangers, and as a place where the men of the family talk and lounge. Sometimes, but rarely, the cow-shed is built outside the walls. The mud enclosure stands in the middle of a bright green patch of vegetables, and the whole is shut in with a good fence of prickly shrubs. ]

Houses,  
clothing  
and food.

The summer dress of a Balasore peasant is a cotton waist-cloth (*dhoti*) falling over the thighs, and tucked up when at work, with a scarf (*gāmchā*) thrown over his shoulder; occasionally also a turban envelops his head. A well-to-do shopkeeper wears an ample cotton shawl (*chādar*) instead of the scarf, which he sometimes twists round his head and ears. He has also a pair of coarse shoes, with long turned-up toes and no heels, elaborately, though roughly, embroidered with coloured thread. In winter the peasant wraps his head and the upper part of his body in a thick double sheet (*dohārā*), while the shopkeeper indulges in a broadcloth scarf (*lūi*) and a cotton shirt. [A peasant's furniture consists of a few brass pots, platters and cups, one or two very rude bedsteads, a few mats, and sometimes some instruments of defence. The better class have generally one or two palm-leaf

books on Hindu mythology in their houses, or a legend out of the Mahābhārata or Rāmāyana.

Rice and milk form a peasant's food, even dried fish being a luxury among the poorest classes. The year's supply of it is stored up in reed baskets, and sparingly doled out. Vegetables also are luxuries not always within their reach. The peasants set aside their boiled rice till it turns slightly sour, and esteem this unpalatable mess a favourite article of diet. After boiling, the rice is allowed to stand for 24 hours in water, until fermentation has slightly set in, and to this sour mess a little salt is added. It need scarcely be added that this the invariable diet of the Oriyā peasant is unstimulating and unwholesome.

Indebted.  
ness.

Regarding the indebtedness of the people, Mr. Kingsford writes as follows:—"Owing to the reticence of ryots, information on the subject of indebtedness is very difficult to obtain. Secrecy regarding their circumstances has become ingrained in them. It is natural that an improvement in condition should be a matter for concealment, since open prosperity has often been the cause of exaction. An old Māsthān Brāhman, who haunted a settlement camp in *pargana* Senaut, had inherited a few acres of land from his father at the age of 25. He now has half a lakh of rupees buried in the floor of his hut, yet a coarse *dhoti* and a still coarser *gāmehā* are all the clothing he has ever been known to wear. Though the circumstances of this man are matter of common knowledge, the tradition that the admission of prosperity is disastrous would suffice to prevent him from generally admitting them. It is not so clear why the habit of secrecy should extend to those in impoverished and involved circumstances; yet it does so, and it was found impossible to ascertain what proportion of ryots in an ordinary village were indebted and to what extent. I believe it, however, to be the fact that excepting a few *lakhirājdrs* and well-to-do cultivators, and excepting the poorest classes who cannot borrow because they have no security to offer, there are very few ryots who are not indebted to the zamindār or the *mahajan* for loans of grain or money.

"Many causes have contributed to this result. The peasant of this district is even less industrious than his brethren in Cuttack, and his husbandry more careless and negligent; a fact which, with the increase of subletting, must be held partially attributable to low rentals. Very few families have stocks to last them longer than 9 months from harvest time, and none amongst the ordinary class have money with which to meet extraordinary calls. A marriage entails an expense of Rs. 50 or Rs. 60, and that at a time when the son is at an age of fifteen and the daughter of ten,

so that the family increases rapidly without any corresponding increase in its resources. To borrow this sum, the ryot must go to the zamindār or the *mahajan*, and in the latter case he must mortgage his holding or ornaments to twice the value of the debt. Calls for interest deplete his stock of paddy, and in September, if not before, he must borrow grain for food. In November he is called on for his rent and must cut a portion of the standing crop before it is fully ripe, and dispose of it at a loss in the nearest market. In December and January he harvests the crop, and in February comes a fresh call for rent and for return of the borrowed grain. After meeting the April *kist* and purchasing the few simple tools he requires and a fresh pack-saddle for his bullock, he finds himself with less than last year's store, with the money debt still owing to the *mahajan* and with a monthly instalment of interest to discharge. But apart from the depression of circumstances induced by his own indiscretion, there is certain to come a season every 10 or 15 years when the crop fails through flood or drought, a misadventure which plunges thrifty and unthrifty alike into debt, from which they seldom manage to recover.

"Indebtedness is admittedly on the increase; and though the distribution of *khatians* has afforded ryots temporary relief by supplying them with an instrument which has much increased the value of their holdings, and represents a gift of some 30 or 40 rupees on the average of each family, there is reason to fear that in the course of the next 30 years the occupaney right will lapse to a large extent, and that the zamindārs, who are already purchasing holdings in considerable quantity, will be in possession of an area of *nij-chās* lands much in excess of that which they now hold."

"The question of indebtedness may be concluded by some remarks on the methods of borrowing in vogue. Money loans.

"Money loans are only required on special occasions and are obtained from the zamindār or the *mahajan*. Under some circumstances, however, a debt incurred in grain is repaid in money and treated in all respect as a money debt. The landlord generally requires a stamped paper, which provides for interest at  $3\frac{1}{2}$  per cent. per month to be punctually paid by the borrower. Sometimes renewal of the deed is required at the expiration of each half-year, the interest due being added to the capital, and the debt thus accumulates at compound interest. The *mahajan* requires security, either the mortgage of the holding or a pledge in the shape of ornaments and utensils to the value of twice the debt incurred. Interest is charged at the same rate of  $3\frac{1}{2}$  per cent. per month.

Grain  
loans.

"Paddy and sometimes money are occasionally loaned by ryots to each other. For grain thus lent to oblige a friend no interest is required, but for cash the interest is at the ordinary rate of 3½ per cent. per month. It is to the zamindār or to the *mahājan* that application is ordinarily made. Advances of grain are generally made on the *pāncpāi* system, 5 maunds of grain being returned at harvest time for every 4 maunds borrowed. This is equivalent to interest at the rate of 25 per cent., but as the loans are usually taken about August or even later, and are scarcely ever current for more than 6 months, the rate of interest is, in fact, 50 per cent. per annum. The *mahājan*, who has no interest in the borrower's lands, generally exacts a higher rate than the zamindār, whose security is better. In either case a *tamassuk* or stamped bond is executed and retained by the lender. So careless is the ryot, and so blindly does he sometimes trust himself in the hands of his zamindārs, that cases are not uncommon where the amount of the debt and the terms of repayment are left blank upon the deed. The ryot signs it. He takes the paddy, and after bestowing a seer or two upon the servant who has measured it, returns home content with his bargain.

"It may seem incredible that such things should occur, but it is not perhaps a matter of extreme surprise, if it be considered how entirely many ryots are in the hands of an influential zamindār. They know that the surplus of their produce will be taken both in the shape of rent and of repayment for previous loans, and they know also that unless they prove refractory, the zamindār will allow them at least a competence. They have nothing to expect but to cultivate their lands and to be allowed to retain so much of the produce as is necessary for their maintenance; and they can rely upon their landlord for assistance in times of scarcity. They are, therefore, indifferent as to the amount of their debts and content to be bled in the knowledge that the operation is necessary, and that it is in their landlords' own interest not to allow it to terminate fatally."

Summary.

In conclusion, the following summary may be quoted from the Quinquennial Administration Report of Orissa for the years 1900 to 1905. The traditional style of living for each of the main classes continues, and the standard has been little raised, though a tendency towards spurious luxury is noticeable in some of the poorer classes. No new industries appear to have been opened. An institution, called the Utkal Union Conference, has been started since 1903 for the improvement of the social and economical condition of the people, and the subject of industrial development appears to be receiving some real and sustained attention; and



it is possible that the next few years may see some progress in this direction. But, at present, the bulk of the population is not only agricultural, but trade and commerce is principally in the hands of foreigners. Social and religious ceremonies continue to be as numerous and indispensable as ever, and there is no tendency observable towards diminution of expenditure on them. Debts are contracted more for these purposes than for agricultural operations, but no reliable statistics are available to differentiate between those incurred for one or the other. The railway, which was considered to have opened up possibilities of improvements, has, with the gradually developing system of feeder roads, become a means of easy transport, and is coming into greater favour with the trading classes, so that the produce of the country is finding its way more quickly into larger markets. In fact, during the last six years, notwithstanding the strongly conservative instincts of the people, increasing activity in trade and a general aspect of increased prosperity have been distinctly noticeable, and the whole Sub-Province is slowly moving along the path of progress.